DRAWN INTO LIFE: MAPPING, DEVELOPMENT, AND ECOLOGICAL VISION IN URBAN INDIA

by
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Abstract

This dissertation situates the development of mapping technologies and cartographic images in relation to the growing global awareness of climate change and a parallel surge in government led environmental reforms. In the wake of natural disasters like the 2004 Indian Ocean tsunami, maps became key instruments for identifying natural resources for conservation, disaster mitigation, sustainable development, the foundation for the India's coastal ecological policy, and vital to the urban planning apparatus. By attending closely to the role of the imaging and survey technology in environmental governance and through fieldwork with surveyors, I show the different registers in which maps, as images, gain social force, bureaucratic authority, and come to lie at the root of different struggles over land, housing, and space in Mumbai.

I attend to the ways in which mapping technologies are taken up by fisher communities in Mumbai, whose lands and livelihoods are affected to the ecological policies of the Indian state. Despite their "non-expert" status, or lack of training in these imaging technologies, the fishing communities engage maps in multiple ways in order to respond to the state, especially at the level of the local planning agencies. I suggest that fishing communities engage these new ecological policies as bureaucratic apparatuses that are distinctly visual, given policy's reliance on the cartographic. As a result, much of the communities' political struggles are conducted through visual practices that recontextualize official maps by placing them in relation to a field of different images that articulate the fishermen's political positions. Communities, such as the fishermen, draw new relations between these official maps and other more "popular" images, such as photographs, montages, and plans. By looking at the role of maps and survey images in a broad visual field, I situate the fisher communities' struggles within a wider public movement demanding greater participation and transparency in urban governance. I track these public movements to show how they emerge from the shift towards neo-liberal planning policies and rely on the cartographic image as a means of engaging the state.

Lastly, I return to the relation between environment and visual representation by suggesting that communities that are caught in the crosshairs of development and the climate crisis find themselves having to take up fluid political positions in relation to shifting long and short-term horizons of community relations, their livelihoods, and ecological and development policies. I suggest that fishing communities in Mumbai cultivate a deep political engagement with images as the improvisational nature of visual practice allows them to navigate the shifting temporal horizons and the changing currents of urban politics and ecological change.

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Introduction

This dissertation looks at the work that maps "do" and the possibilities they bring to bear upon contemporary ecological and spatial politics in urban India. It examines these images in the lives of fishers[1] living in informal settlements in the city of Mumbai, who, since 2011, when the Ministry of Environment and Forests (MoEF) released the revised Coastal Regulatory Zone (CRZ) notification, are involved in different mapping and planning projects. My interests are not confined to the "social lives"[2] of maps as they get produced, published, and circulate in a public domain, though I do look at this as well. But apart from this, much of the action in the dissertation happens around maps and plans as they change states,[3] as they move between being images and bureaucratic documents, as they reside between texts or photographs, or even when they are not a "thing" yet[4] – for instance, when they happen to be announced as impending surveys, as half finished lines on a surveyors sketch book, possible maps, of proposed plans, of things people do around future maps or maps that exist, and of details like categories, colors, and scale. My ethnographic fieldwork looks at the political action that happens when maps and plans come into being such that they introduce concrete possibilities into the world. In such a scenario, I look at how fisher

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1   Following Ajantha Subramanian's lead, I use the gender neutral term "fishers" instead of the masculine "fisherman." But while Subramanian uses this term throughout her work, I use "fisherman/men" especially when writing about fishing as a livelihood as this allows me to mark gendered roles and spaces clearly. See: Subramanian, Ajantha. 2009. *Shorelines: Space and Rights in South India*. Palo Alto: Stanford University Press.

2   Here, I draw from Appadurai's idea that commodities have "social lives," though for Appadurai this enlivening of things happens as a result of human action around things. See: Appadurai, Arjun. 1988. *The Social Life of Things: Commodities in Cultural Perspective*. Cambridge University Press.

3   I take the term "changing states" in the physical sense, as moving from water to ice.

4   One way to put this would be to say their social life begins even before they are drawn.

communities navigate those possibilities, and how that navigation happens by way of the visual, and more specifically, through the cartographic image.

In order to explain myself more clearly, I turn to a pamphlet that I came across early in my fieldwork. On the front of this pamphlet that contains the index to the topographic survey sheets published by the Survey of India office, I found printed the following words:

"…Its (Survey of India) officers and staff have to pioneer untrodden lands for others to follow and build upon. They have to go to the deepest forests, deserts, and swamps, to the remotest corners of the land, to the lowest coastal belts, and the highest snowy mountains – in fact they are the first to reach virgin and uninhabited areas. There, they ceaselessly, faithfully, and unobtrusively toil to produce the maps so essential for development, defense, and administration. In the process they get familiar with each and every corner of the country and its deep interiors and mingle with the soil and the dust and the people of India."[5]

I was sitting perched on a stool in a lab in the Center of Studies in Resources Engineering at the Indian Institute of Technology, surrounded by rolls of maps of different kinds. I did not have permission to see these maps, but it was early days in my fieldwork and I was just beginning to learn about the technicalities of surveying. I had been given this pamphlet so I could understand the indexing system used to order the topographic survey sheets. The pamphlet itself was not very special or extraordinary in appearance; it had a map with a grid on one side and text on the other describing how to use the index, and yet, and I was completely taken by this document (see Fig. 1). It seemed to me that I had been given the key to a vast archive and that I was standing at its threshold, poised to walk in.[6] Even more than that, I felt oddly pricked by the text – I thought at the time that my inability to fulfill my

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5   Unfortunately, I was not allowed to make copies of this pamphlet or any other map in that archive, and thus cannot provide a proper citation. I do show a similar index in Figure 1. However, this image only shows the pictorial index, not the text printed on the reverse side.

6   It is indeed a vast archive if we were even to consider the sheer number of sheets each index indicates. Each major square in the grid (indicated by the large undivided blank square over the Arabian sea in this image) is subdivided into several parts in the surveyed area. In the surveyed area, each large square refers back to 337 separate survey sheets. Thus, an index referring to a single archive of surveys of India at different scales would consist of approximately 8088 sheets.

desire to open up every sheet in the room heightened the sense of maps as somehow special, as almost like the substrate of a chemical reaction that "emanated" from the encounter between the cartographer and the landscape. The text certainly gave that impression. I would like to unpack and scrutinize this text further.
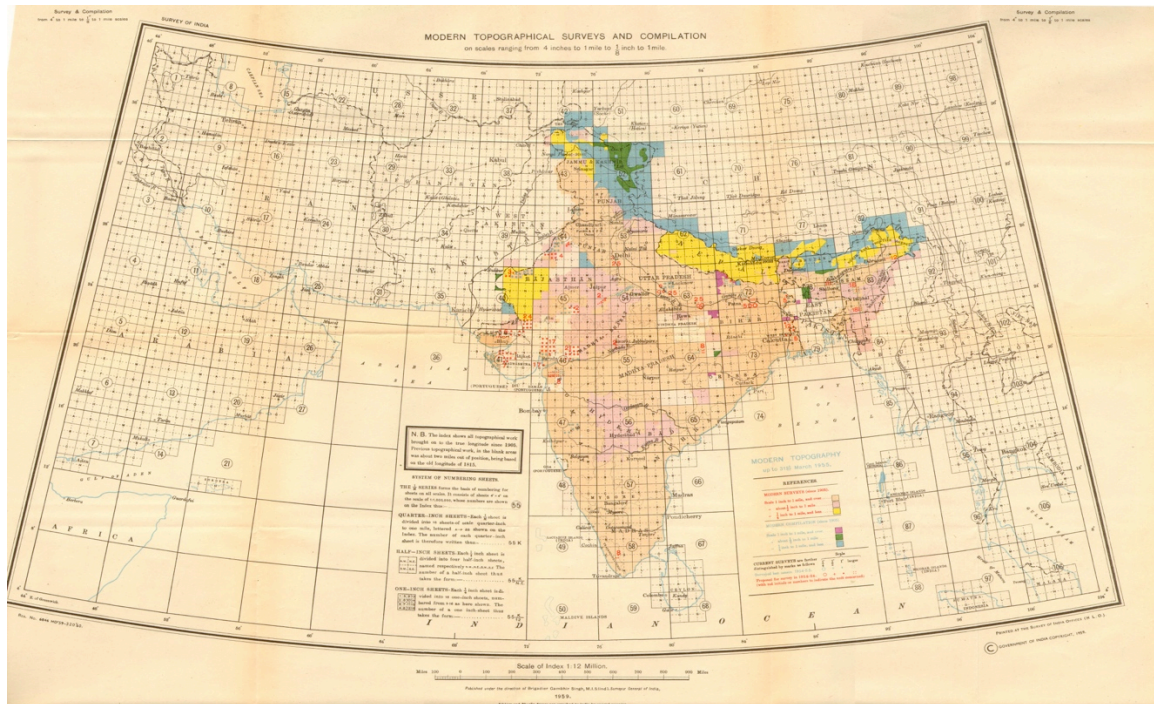
Figure 1: Index to the Topographic Survey Sheets of India (1/M, quarter, half, and one inch series). Published in 1959 under the direction of the Surveyor General of India. Each part of the grid refers to a survey conducted at a particular scale. The different colors separate surveys conducted at different times. This sheet is similar to the pamphlet I refer to, though I believe it predates it by a couple of decades. Source: www.pahar.in[7]

I attribute one part of the initial fascination with the text to the figure of the explorer cartographer trudging through swamps and hiking up cliffs and fording rivers, each mission more dangerous than the next. But I think what really intrigues me, and the reason why I keep going back to this text, is the way in which it describes the map's emergence in the encounter between the cartographer and the landscape, and the relationship it sets up

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[7]   For this and other maps and indexes see: http://pahar.in/survey-of-india-report-maps/. Last accessed March 9, 2015.

between the state, the map, and people/ populations who become the object of governance through policies like the CRZ.

The text describes maps and "knowledge" (of people and the elements that constitute the terrain) as the products of the relation between the cartographer and the terrain. Here, maps and knowledge are inseparable in that knowledge is produced in the act of drawing the map. The text also gives us the impression of a perilous, wild, and uninhabited landscape from which people emerge in the act of producing maps, as from the dust kicked up by the cartographer's boots. Historians of cartography have interrogated the relationship between such claims to knowledge and the process of mapping and surveying colonial territories. In Matthew Edney's work on the mapping projects deployed by East India Company and later, the British, he writes about the inextricable relationship between empire making and geography, where governance and control were established though a perceived knowledge of a territory based on detailed cartographic representations.[8] As he writes, "to govern territories, one must know them."[9] The map then became the center of that knowing, and of colonial governance; a heritage that is reflected in the words printed on the pamphlet. Going back to the description in the pamphlet, this knowledge resides in the cartographer and the map, which, in the pamphlet text, seem to be conflated.

Behind this colonial knowledge production enterprise was the disciplinary gaze employed by the British surveyor-engineer who looked at the Indian landscape as "a surgeon looks at his patient, as an item to be thoroughly investigated, measured and prodded so that

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8   Edney, Matthew H. 1997. Mapping an Empire: The Geographical Construction of British India, 1765-1843. University of Chicago Press.
9   Edney. 1997. Pg. 1

maladies and imperfections are identified, understood, adjusted, controlled, and so cured."[10]

Michel Foucault describes this gaze as a "ceremony of objectification" through which subjects emerge:

"Traditionally, power was what was seen, what was shown, and what was manifested...Disciplinary power, on the other hand, is exercised through its invisibility; at the same time it imposes on those whom it subjects a principle of compulsory visibility. In discipline, it is the subjects who have to be seen. Their visibility assures the hold of the power that is exercised over them. It is this fact of being constantly seen, of being able always to be seen, that maintains the disciplined individual in his subjection. And the examination is the technique by which power, instead of emitting the signs of its potency, instead of imposing its mark on its subjects, holds them in a mechanism of objectification. In this space of domination, disciplinary power manifests its potency, essentially by arranging objects. The examination is, as it were, the ceremony of this objectification."[11]

I believe this passage resonates with the way in which subjects, or "people," emerge at the end of the text in the pamphlet, in making of the map. Until that moment, when they become an entity governed by the state through the map, people remain invisible. In the context of the pamphlet, they are not of any consequence to the making of the map, which concerns only the cartographer's expert gaze and the landscape. We know that this was far from the case – as Edney writes, colonial cartographers and geographic observers[12] claimed to deploy an "immediacy of vision," such that the map was to be read as a record of what *they* saw. This was despite the fact that "natives," who were usually described as porters or guides, were very often "active participants" in the process. Other examples include Barbara Mundy's work on the first map of Tenochtitlan that was published as a woodcut in the early 16th century, which Mundy argues was based on an indigenous prototype.[13] Nevertheless, the

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10   Edney. 1997. Pg 52.

11   Foucault, Michel. 1977. *Discipline and Punish: The Birth of the Prison*. Vintage Books. Pg. 187-88

12   A term Edney (1997) uses to describe graphic artists who travelled across the subcontinent making picturesque views of places.

13   As Mundy writes, "the widely accepted view among historians and art historians was that style was perhaps the best index of authorship – if something looked European, then its painter or carver or artist was European." Mundy, Barbara E. 1998. "Mapping the Aztec Capital: The 1524 Nuremberg Map of Tenochtitlan, Its Sources and Meanings." *Imago Mundi* 50 (1): 11–33. Pg. 13.

knowledge described in these maps was ultimately taken to be the result of the colonial cartographer's experience and vision.

I believe the reason I felt compelled to keep going back to the text on the pamphlet is because it points to something quite important – namely, a certain *"given-ness"* in the relation between the cartographer and the map, and in its emergence. The people who are produced as "subjects" through these acts of mapping hang around in its corners, only to emerge from within the cartographic image. That is to say, the mapping and planning process draws people into life, reorganizes them into specific categories and populations, in the process of implementing developmental and ecological policies. However, my experience in the field also demonstrated, repeatedly, that communities like the fishers and slum dwellers, which are the subject of these state surveys, are hardly ever passive. As my ethnography shows, they intercede even within the relationship between the cartographer and the landscape, in the very act of drawing, actively militating against and participating in the construction of lines, zones, and categories. While several anthropologists and geographers have addressed such political action through counter-cartographic strategies, as my work shows, in the context of the CRZ, much of the politics happens from within the CRZ's mapping enterprise.

In his account of the conflict between peasants and the Peruvian State over the right to harvest reeds from Lake Titicaca, Benjamin Orlove examines maps drawn by both sides in order to understand the different ideas of geography and land claims at stake. His examination of maps is organized around two sets of questions: how people *draw* maps, and secondly, how people *draw on* maps. By the former, Orlove means the "ways in which maps portray notions of the relations that social groups, categories, and institutions have with one

another and specific territories," and by the latter he refers to the "ways in which social actors use maps in social interactions, especially conflicts." Thus Orlove conducts both a formal analysis of maps – comparing features, classification, and the inclusion or exclusion of specific elements, and an "analysis of practice," where he looks at the ethnographies of viewing and working with maps.[14]

To these sets of analyses, I add the framework of looking at how people are *drawn into* maps and the mapping process. I distinguish this from Orlove's "how people draw maps," as in his work there is no overlap between the state's or the community's mapping process. While the state's "maps" follow a western cartographic language, the maps drawn by peasant communities who live in parts of the area classified as a nature reserve follow this convention more loosely, are drawn at a different scale, and indicate a more "experiential" view of the landscape. Thus, Orlove finds a formal incommensurability between the two sets of images, which he argues, is an important reason why the conflict remains unresolved. However, my ethnography takes a different route.[15] As my chapters will show, fisher communities engage in political contestation in the language of the official cartographic image. I use the term "draw in" to mean not just how people are drawn in as populations, but also how they intervene within a process of drawing – even that conducted by another entity such as the state – in order to control the possibilities of how they come to be drawn, named, or categorized.

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14   Orlove, Benjamin S. 1991. "Mapping Reeds and Reading Maps: The Politics of Representation in Lake Titicaca." *American Ethnologist* 18 (1): 3–38. Pg. 4
15   Ibid.

Background and Context: Why Maps?

If I were asked to draw a simplified mid-scale map in order to locate this project (as a way of explaining its relevance), I would mark its location at the intersection of three historical developments: the development of satellite and associated mapping technology, the politics of ecological conservation and management, and the cultures of participatory planning and neoliberal urban governance in India.

By the time of this dissertation's completion, Google Earth will celebrate its tenth anniversary.[16] Soon after Google Earth was released in the public domain in 2005, ecologists were quick to seize upon this resource as a way of tracking and visualizing conservation efforts that mapped eco-regions or tracked species while simultaneously making these visualizations available in the public domain. Google Earth was by no means the first instance of using photographs to view and plan landscapes. It follows a long history of using aerial photography, which was used for forest and agricultural management.[17][18] Satellite technology became central to ecological conservation as a result of its popularity and accessibility. As Stefan Helmreich notes in his essay on the sister technology of Google Ocean:

"If in the 1960s the Whole Earth, the planet as seen from space became a cold war, proto-environmentalist icon for a fragile ocean planet, in the 2010s Google Earth, the globe encountered as a manipulable virtual object on our computer screens, has become an index for multiple and socially various interpretations and

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16   Google Earth is by no means the first publicly available geographic visualization technology. However, given the way it emerged as a social platform by 2011 when I began my fieldwork, it serves as a good starting point to talk about the public pull of these technologies and they way they were taken up in planning processes in Mumbai.

17   It was also used in warfare to make maps of enemy territories and I am aware of the geo-political implications of these technologies though I do not engage that conversation much here. For the technical uses of aerial photography and a comparison with satellite imagery see: Morgan, Jessica L., Sarah E. Gergel, and Nicholas C. Coops. 2010. "Aerial Photography: A Rapidly Evolving Tool for Ecological Management." *BioScience* 60 (1): 47–59.

18   Summerhayes, Catherine. 2015. *Google Earth: Outreach and Activism*. Bloomsbury Publishing USA.

interventions; its thicket of satellite images, text legends, and street level photographs can all be tagged, commented upon, modified."[19]

Geo-spatial technologies are often pitched as platforms that enable new forms of sociality based on a virtual co-presence where, as Turkel writes, "the isolation of our physical bodies does not indicate our state of connectedness but may be its precondition."[20] This capacity to see and "be" in places that might be physically distant combined with the capacity to move between scales[21] instills what Catherine Summerhayes calls a "compassionate vision," which she identifies as "an emotion-driven imagination that draws on a person's own life experience to identify with and, to an extent, feel another's situation."[22] Thus, geo-spatial technologies serve as screens that connect people on affective and political registers across distance and scale. This is directly related to matters of conservation and ecological politics. Not only were these technologies quickly absorbed into conservation programs, but also the very question of conservation and ecological responsibility appeared as one that affected everyone across the world evenly, that everyone had equal stake in. That is, these technologies became important visual vehicles that allowed audiences the ability to picture the globe as an interconnected ecological system, as one image, which resonated on different affective and political registers. Their geopolitical and ecological significance can, following media theorists such as Roger Stahl, be thought of in two ways, where geospatial technologies operate as a:

"metaregime" of visibility under which a multitude of "subregimes" negotiate exposure. According to this perspective, the importance of the technology is understood through a calculation of control and accessibility,

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19   Helmreich, Stefan. 2011. "From Spaceship Earth to Google Ocean: Planetary Icons, Indexes, and Infrastructures." *Social Research* 78 (4): 1211–42. Pg. 1211

20   Turkle, Sherry. 2006. "Tethering." Sensorium. Embodied Experience, Technology and Contemporary Art. Cambridge. Pg. 222.

21   That is the capacity to move between ones locality and the whole globe in instant, which builds an affective relation between the two scales.

22   Summerhayes is writing in the context of political conflicts, and I take her idea in order to think about compassionate vision in relation to matters of ecology. See: Summerhayes, Catherine. 2010. "Google Earth and the Business of Compassion." *Global Media Journal Australian Edition* 4 (2): 1–14.

secrecy and transparency—a scramble where vectors of the eye duke it out, whether the interests be military, commercial, civic, or personal. The second perspective works through what one might call the "aesthetics of visibility" or the ways Google Earth acts as a kind of text, a powerful public screen onto which a political landscape is projected and thereby made sensible."[23]

While Stahl encapsulates the "martial aura" of these technologies and the ways in which they become instruments of control, calculation in order to rework geopolitical relationships, I want to use his work to draw attention to questions of ecological control, development, and management to think about the importance of spatial technologies in contemporary ecological policies – especially that of coastal "management."

I take up the shift from using the framework of "rights and responsibilities" to that of "management" in ecological policies in the Indian context in the first chapter. Here, I want to bring this up briefly through the history of coastal zone management in order to position my work on maps in relation to this policy framework. Contemporary coastal ecological policies, which conceive of the coast as a dynamic zone consisting of several fluctuating elements and resources, derive from policies on coastal protection. These "protection" policies concern themselves with both establishing a territorial line and building coastal infrastructure that defend it from actions such as erosion. Thus, these laws generally concern maintaining the physical integrity of the coast for national development and as a territorial frontier.[24] The concept of coastal zone "management" emerged in the 1970s when the United Nations Environment Program (UNEP) instituted the Regional Seas Program as way of building institutional interconnections and co-operation between national and international entities that work in or govern coasts and marine areas. The Regional Seas Program introduced the idea of an "integrated" coastal management system, known as ICM

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23   Stahl, Roger. 2010. "Becoming Bombs: 3D Animated Satellite Imagery and the Weaponization of the Civic Eye." *MediaTropes* 2 (2): 65–93. Pg. 67.

24   Charlier, Roger H., Marie Claire P. Chaineux, and Selim Morcos. 2005. "Panorama of the History of Coastal Protection." *Journal of Coastal Research*, 79–111.

or ICZM (Integrated Coastal Zone Management System) based on the idea that ecological

systems do not follow anthropogenic divisions such as political boundaries. These systems

that included:

"…the integrated planning and management of coastal resources and environments in a manner that is based on the physical, socioeconomic and political interconnections both within and among the dynamic coastal systems, which when aggregated together, define a coastal zone. An integrated approach requires both the horizontal (cross-sectoral) and the vertical (the levels of government and non-government organizations) coordination of those stake holders whose actions significantly influence the quantity or quality of coastal resources and environments."[25]

The ICZM, as a concept, attempts to connect these ecological "systems" with political

institutions. In doing so, ICZM emerges as a policy framework that is integrally tied to ideas

of territory, yield, resource exploitation, and fundamentally based on identifying systems,

elements, institution, population, and resources in the coast and in marine zones. This

concept of management based on maximum yield also lies at the back of policies regarding

specific categories of resources such as forests and fisheries, which are based on evaluating

resource production in relation to population and resource potential.[26] Thus, an ICZM can

be thought of as an instrument of calculation, where potentials and capacities are balanced

and measured against uncertainties of climate change, or events such as natural disasters – or

to follow Foucault, as a "security apparatus" where the governance of the coast is

understood in relation to a "series of probable events" and in relation to the calculations of

costs and yields.[27] These security apparatuses are closely tied to apparatuses of territory.[28]

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25   Sorensen, Jens. 1997. "National and International Efforts at Integrated Coastal Management: Definitions, Achievements, and Lessons." *Coastal Management* 25 (1): 3–41. Pg. 9.

26   Beisner, Beatrix. 2005. Ecological Paradigms Lost: Routes of Theory Change. Academic Press.

27   Foucault, Michel. 2009. Security, Territory, Population: Lectures at the Collège de France 1977–1978. Vol. 4. Macmillan. Pg. 6.

28   One can make a direct connection between territory and resource management in that resource potential is directly related to the geographic extent of the territory held. For instance, the resource potential of India's fishing sector is calculated in relation to the area of the coastal continental shelf available for the country's "exploitation." I take this up in greater detail in the last chapter. See:

That is to say, that mechanisms of coastal management do not replace ideas of coastal protection, but are tied up with them in different ways.[29]

Mapping and the construction of geographic databases becomes an important task within the coastal management apparatus. It becomes the visual center upon which zones of productivity along with limits and boundaries are made visible and appear in relation to data regarding natural resources, populations, and topographic and marine features. Geographic Information Systems (GIS), combined with remote sensing technology[30] became a way of not just collecting new data on the coast, but also a way of bringing existing data sets (about land, water, topography, and census data) together in order to present a comprehensive picture of the zone.[31]

In the context of Mumbai, the implementation of the new coastal zone management policy coincided with the revision of the city's master plan. The Indian government released the revised Coastal Zone notification in January 2011 and in order to implement the policy, it initiated an exhaustive project to map the entire 4600 mile long coastline in high-resolution. Simultaneously, the Municipal Corporation of Mumbai began revising the city's "Development Plan;" a set of plans and projections that regulate growth and land use in the

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29   Foucault writes about the interconnections between these apparatuses: "There is not the legal age, the disciplinary age, and then the age of security. Mechanisms of security do not replace disciplinary mechanisms, which would have replaced juridico-legal mechanisms. In reality you have a series of complex edifices in which, of course, the techniques themselves change and are perfected, or anyway become more complicated, but in which what above all changes is the dominant characteristic, or more exactly, the system of correlation between juridico-legal mechanisms, disciplinary mechanisms, and mechanisms of security. In other words, there is a history of the actual techniques themselves." Foucault. 2009. Pg. 8.

30   It is important to make a distinction remote sensing and GIS. GIS refers to systems that collates or compares data of any kind on a cartographic interface in order to present or analyze the data geographically. Remote sensing refers to ways of capturing information about any object without physically examining it, and more specifically, it refers to

31   For the importance of GIS and remote sensing in ICZM, see: King, Stephen D., and David R. Green. 2001. "Redefining the Limits of the Coastal Zone: Bridging the Gap between Land and Sea Using Remote Sensing, GIS, and the Internet." *GeoCoast* 2: 1–15.

city. Central to both these state led mapping projects are visions of transforming Mumbai into a modern, global, and "green" metropolis by instituting environmental reforms. As fishing communities depend upon and live within coastal areas, demarcating and regulating these settlements was an important task in both these initiatives. Consequently, the fishing communities became an integral part of these mapping and planning projects and at the intense focus of the state's developmental vision. The fishing communities in Mumbai responded to these projects by forming strategic alliances with planners, architects, urban activists, and NGOs in order to draw their own maps to claim their right to space within the rubric of the new policy – a political move, which as I explain in the fourth chapter, comes out of neoliberal urban reform and participatory planning and design cultures. As a result, by 2011 when I started my fieldwork, there were several different groups simultaneously engaged in different, yet interconnected mapping exercises.

In the 1990s the Indian government introduced key shifts in urban governance and public policy, particularly through decentralized planning practices. These planning initiatives were promoted through the rhetoric of transparency, increased access to information, and urban reform. Central to these initiatives was idea of promoting partnerships between different community organizations and private entities such as developers as a means of accessing the opportunities thrown up by decentralized governance.[32] This shift towards decentralized planning was a key element in a changing terrain of planning and design practice as it fostered collaborative and creative partnerships between architecture schools, planners, NGOs and between community organizations. These collectives flourished in Mumbai and through projects that documented communities and neighborhoods, began

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32   Appadurai, Arjun. 2000. "Grassroots Globalization and the Research Imagination." *Public Culture* 12 (1): 1–19.

using the language of the maps and mapping as a means of creating alternate visions for intervening in the urban landscape.[33] They became an important means of negotiating the visions of Mumbai as a global city, critiquing urban change, and finding a foothold in this transformative process through the visual – more specifically, through the cartographic image. It is important to distinguish the work of these collectives from "counter-cartographic" projects, which, in many cases, position themselves against the visual language of maps and plans.[34] However, as my ethnography will show, fisher communities in Mumbai meticulously follow the language of the cartographic plan, including the conventions, scales, and visual language of planning and mapping used by the state as they think it critical to the efficacy and force of their political claims. That is to say, fisher communities (in alliance with architects, planners, and NGOS) engage the spatial and ecological politics of CRZ and the city's urban transformation from within the authorial structure of the state's planning apparatus. As the new CRZ notification had only just been released in early 2011, the surveys and mapping exercises were underway. Thus, much of this visual work and production of alternate maps and plans were pitched into a future encounter with either the cartographer appointed by the state, or anticipated legal and political struggles, and were tinged by the uncertainty surrounding fishing as a livelihood, political alliances between different communities facing different land pressures, and the longer term insecurities surrounding urban rights in a rapidly changing city.

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33   Hoskote, Ranjit. 2007. "Versions of a Postcolonial Metropolis." The Making of Global City Regions: Johannesburg, Mumbai/Bombay, São Paulo, and Shanghai, 258.
34   Bryan, Joe. 2011. "Walking the Line: Participatory Mapping, Indigenous Rights, and Neoliberalism." *Geoforum* 42 (1): 40–50.
        Crampton, Jeremy W., and John Krygier. 2006. "An Introduction to Critical Cartography." *ACME: An International E-Journal for Critical Geographies* 4 (1): 11–33.

Chapter Summaries

The first chapter of my dissertation charts a history of the CRZ notification to uncover how mapping came to be central to implementing the new coastal policy and came to gain social and bureaucratic force. I track the relationship between mapping and environmental governance in relation to the move towards neoliberal planning policies that operate around the idea of ecological management, mapping capacities offered by the advancement of cartographic technology, and the marks left by events such as the 2004 Indian Ocean Tsunami in the historical narrative of the coastal ecological policy. By placing the map in the middle of events and judicial and governmental decisions, I show how the CRZ emerged as a bureaucratic entity through the process of making high-resolution maps and through its relations with other survey regimes. Through ethnographic encounters with government cartographers I look at the process of producing a high resolution map as one that does not simply record a landscape, but rather, one that involves working across maps, records, photographs, and survey records. Thus, production of the CRZ as a territorial entity happens through the production of numerous other images and apparatuses. In the second part of the chapter, I approach the idea of scale and resolution through the rhetoric of management. I look at how the new CRZ notification refigures the coast as a dynamic entity made up of varied elements that need to be "managed" through different developmental technologies. These technologies offered a means of re-ordering nature through the process of visually locating and recording these elements. I show how maps came to be at the heart of coastal zone management policies packing several layers of complex "data," which in turn became the basis for implementing these policies.

The second chapter looks at how Coastal Zone Management Authority's decision to

survey informal settlements as a part of the process of implementing the CRZ policy sets the stage for a political struggle to secure housing for residents of fisher communities. I show how the CRZ distributes housing rights unevenly based on two competing notions of "vulnerability." Based on the understanding that the fisher community shared an intimate relation with the coastal environment, the 2011 CRZ granted them the right to develop these settlements provided they could prove that they were legally "recognized" as fishing settlements. At the same time, it directed that residents of "slum" settlements located along the coast of Mumbai be rehoused in accordance with the Maharashtra state's slum rehabilitation policy. This created a paradoxical situation on the ground as fisher communities in the city of Mumbai live in dense unplanned hybrid settlements along with many other communities, including migrant workers, making it hard to pinpoint the identity of these settlements. Moreover, the municipal corporation announced a survey to identify settlements as "fishing villages," thereby introducing a new classificatory category it intended to map on the ground. Consequently, these classificatory categories drew fresh boundaries between communities living in unplanned settlements that are rife with internal divisions. These anxieties were amplified because of the absence of survey records or documents that would allow communities to make any concrete claims. Faced with the need to "prove" their identity as "native" fishers in order to claim developmental rights under the CRZ policy, much of the fisher communities' efforts were directed towards the construction of visual and material proofs in order to be recorded in the "right" category in a future survey. This chapter also tracks existing cultures of surveying in fishing villages. Through ethnographic encounters between fishermen involved in property disputes, I show how the surveyor is often called in an unofficial capacity to act as both a mediator and to re-perform the act of surveying in order to resolve the dispute. Through this ethnographic encounter I argue that

the moment of drawing the survey is not one that is confined to the cartographer and the landscape or property in question, but rather, is a moment where others can participate and intervene, and thus, is a moment when a political intervention can happen. Thus, I argue that when the municipal corporation announces a survey, fisher communities mobilize in order to intervene in that moment, in order to influence the survey that is eventually drawn.

The third chapter looks at the ways in which fisher communities mobilize public support and support from regional political parties at popular seafood festivals. Continuing from the problem of classification I show how fishing villages attempt to allay the danger of being "misrecognized" as slums by reworking older traditions of representing "native" fisher communities and recreating the scene of a traditional village in order to assert the identity of their communities and of their settlements. In the process, they channel the rhetoric of "traditional rights" and "regional nativism" to distance themselves from the "migrants." Within the space of the seafood festival, this claim to land and housing rights is manifest in non-verbal forms and is evoked through the strategic interplay of images of native fisher men and women, objects such as fishing nets, and colors, materials, and textures that refer to their identity as the "original inhabitants" of the city. These different visual signs are juxtaposed against images of key political figures and, most importantly, against images of surveys that project their claims upon a map that recognizes their claims.

In the fourth chapter, I step back to situate these struggles around housing within a wider terrain of planning practices in Mumbai, to look at the cultures of circulation and collection of maps and plans. I situate the fisher communities' struggles within a wider public movement demanding greater participation in the planning process. I locate this public movement in the shift towards neo-liberal planning policies, and e-governance

initiatives in India, while showing how this movement too relies on the cartographic image as a means of engaging the state. At the heart of this movement is the idea of a transparent, free, and unfettered circulation of documents like maps and plans between the government agencies, planning bodies NGOs, and citizens' collectives. However, I trouble this idea of a free circulation by looking at the ways in which cultures of circulation through which plans and maps are shared, seen, and archived relation to struggles over housing.

Lastly, I look at how fishers in Mumbai negotiate the ecological visions of the CRZ through both the activity of fishing and through political action, which relies on entering into alliances with architects, developers, and planners. Such a political alliance relies on the visual as a means of conveying the communities' desires to the state, and as a means of being able to speak in the language of the state and developmental politics through the use of the cartographic image. I suggest that there are conceptual parallels between the day-to-day process of catching and selling fish, drawing and mapping, and political action, as acts that are characterized by the quality of improvisation, which take place within a terrain of ecological, financial, and political risk. The ideas of improvisation that underpin these acts do not completely overlap; rather, they animate, crossover, and are brought to bear upon struggle to secure housing and allay the possibility of displacement. I suggest that fishing communities in Mumbai cultivate a deep political engagement with images as the improvisational nature of visual practice allows them to navigate the shifting temporal horizons and the changing currents of urban politics. At the same time, these conflicts over land and housing seem to take on a greater sense of urgency than long-term issues of livelihood, sustainability, ecological change, and pollution – some of the most important reasons for introducing the coastal ecological policy, and issues that are critical to the survival of coastal communities and to their livelihood. These issues which are of great

importance to Mumbai's long-term development, and perhaps even its existence as a coastal city, remain deferred within these maps, plans, and visions, appearing only as faint lines in the horizon.

Chapter One

A Cartographic Canvas

In 2011, the Ministry of Environment and Forests (MoEF) of the Indian government released a new version of the "Coastal Regulatory Zone" or CRZ, a policy that attempts to regulate development and initiate ecological conservation projects along the country's nearly 7500 km long coast.[1] The CRZ policy classifies the coast into zones of varying ecological sensitivity and resource value based on which different development potentials or restrictions are enforced within those zones. Since its release, the CRZ has been mired in controversy. Several activists and scholars have argued that CRZ is a pro-development policy hiding behind a facade of environmentalism as the development restrictions and allowances it contains contradict its aim to conserve the coastal environment.[2] For instance, while the CRZ poses severe development restrictions in areas identified as highly sensitive zones, it allows the construction of nuclear plants, oil and natural gas exploration, ports, and software centers within those zones in the name of public interest.

At the forefront of this policy is the task of creating high-resolution maps of the coast, based on which the development plans for this region are to be made. After the new notification was released in 2011, the government initiated an exhaustive mapping project to survey the entire coast using high-resolution GPS technologies, a task that was subsequently delegated to each of the coastal states. The MoEF issued a directive to each of the coastal

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1   Ministry of Environment and Forests. 2011. The Coastal Regulatory Zone Notification.
2   Menon, Manju, Sudarshan Rodriguez, and Aarthi Sridhar. 2007. "Coastal Zone Management: Better or Bitter Fare?" *Economic and Political Weekly* 42 (38): 3838–40.

states to prepare Coastal Zone Management Plans (CZMP), a set of drawings that would show the extent of each of the different zones within the CRZ in detail. As a result of this directive, several coastal states are in the process of conducting the mapping exercise and building an online database of the plans for the public.[3]

In the state of Maharashtra, the Municipal Corporation of Greater Mumbai (MCGM) was tasked with the project of preparing a comprehensive CZMP for the city of Mumbai. Soon after this order was passed, an official from the MCGM announced that it would introduce a facility "whereby information regarding CRZ areas, maps, list of locations in CRZ along with mangroves, *gaothan* (village) area" would be made available to the public via an online interface. On this interface, anyone could "feed in the survey number of the plot or construction site and find out whether they fall under CRZ or not."[4] This CZMP and the online interface were to be completed by 2012. But they are still under construction.

Within the discourse of the CRZ and the online interface announced by the Municipal official, these maps were framed as the instruments through which the CRZ would formalize the governance of nature, natural resources, and coastal inhabitants. As these maps would deal with individual property records, they also became the means of integrating individuals into this new environmental regime, though in public pronouncements this was articulated as the means by which the CRZ could become legible to citizens, allowing them to "participate" in the state's vision for the "sustainable development" of the coastal landscape.

Like other policy initiatives in recent times, the CRZ emerges as a new kind of

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3   See the online database created by the Tamil Nadu Government at:
http://www.environment.tn.nic.in/iczmp-maps1.html
4   Patwa, Sharvari. Dec 13 2011. *Civic body ropes in Chennai varsity to make coastal plan.* The Indian Express. http://archive.indianexpress.com/news/civic-body-ropes-in-chennai-varsity-to-make-coastal-plan/887057/0. Last Accessed: 31 March 2015. Translation mine.

bureaucratic apparatus, one that not only deploys new media technologies and survey instruments, but also one that resides in and is disseminated through a virtual interface. In India, these new policies are characteristic of a major shift in governmental technologies towards digital apparatuses. While this shift is driven by the rhetoric of increased transparency, participation, and the charisma of internet technologies, it has been far from a smooth process, and many such initiatives are mired in delays and controversies.[5] In such a scenario, it is important to look at the form of bureaucratic entities like the CRZ. Do they entail a complete shift from previous forms of "paper governance," or are there continuities that one can trace between these technological apparatuses? What kind of entities are new governmental initiatives like the CRZ and how are they shaped by the use of new survey technologies such as high-resolution mapping and GIS databases?

This chapter explores these questions by looking at the relationship between mapping and survey technologies in the context of a shifting political terrain of environmental governance. I track the relationship between mapping and environmental governance in relation to the move towards neoliberal planning policies, mapping capacities offered by the advancement of cartographic technology, and the marks left by events such as the 2004 Indian Ocean Tsunami in the historical narrative of the coastal ecological policy. By placing the map in the middle of this mixture that consists of narratives, events, and judicial and governmental decisions, I aim to make two arguments: First, I intend to show how the CRZ emerged as a bureaucratic entity through the process of making high-resolution maps and through its relations with other survey regimes. Second, I intend to show how the relation between the map and geographic realities is not simply one where the map as a technical drawing "represents" what is on ground. Apart from the concern of producing an

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5   Mazzarella, William. 2010. "Beautiful Balloon: The Digital Divide and the Charisma of New Media in India." *American Ethnologist* 37 (4): 783–804.

"objective" record of geography (and there certainly is such a concern), I show how the production of the CRZ map tracks back and forth between a number of different maps, images, documents, and reports, such that the map itself cannot be thought of as a set of lines appearing on a virtual interface, but rather as a visual assemblage that connects many different kinds of information and apparatuses, both old and new.

This chapter treads a path charted by many other anthropologists of the state whose works examine the productive capacities of bureaucratic documents like maps and surveys. While much of the literature has focused on the use and content of written documents, especially on the material life of texts,[6] they offer productive ways to think about other genres of bureaucratic inscription. In following this path, I look at how documents such as maps are not simply "instruments" through which new environmental regimes are put in place, but rather, as Matthew Hull describes, are "constitutive of bureaucratic rules, ideologies, knowledge, practices, subjectivities, objects, outcomes, even the organizations themselves."[7]

The manner in which I arrive at this point is circuitous: instead of focusing on the narrative of technological advancement as a way of looking at the use of maps in contemporary policies, I look at the issues of scale and resolution that animate the development of the CRZ policy and the way in which maps are called forth in relation to these issues. In the first section, I look at how questions of resolution and scale come up in court cases concerning individual properties and developments within the CRZ. Here, I track how the courts look for the signature or stamp of governmental approval in using

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6   See: Tarlo, Emma. 2001. "Paper Truths: The Emergency and Slum Clearance through Forgotten Files." *The Everyday State and Society in Modern India*, 68–90.
and Gordillo, Gastón. 2006. "The Crucible of Citizenship: ID-Paper Fetishism in the Argentinean Chaco." *American Ethnologist* 33 (2): 162–76.
7   Hull, Matthew S. 2012. Documents and Bureaucracy. *Annual Review of Anthropology* 41: 251–267. Pg. 253

maps as evidence, often preferring these maps over ones that might show the same area in higher-resolution (such as images from Google Earth). I show how in the process of creating these "legitimate" maps, the CRZ too comes to gain bureaucratic legitimacy. The second section continues this examination of resolution and scale, but from a different angle. I examine the process of producing high-resolution maps of the CRZ through an ethnographic account of the surveys conducted in the city of Mumbai. Through encounters with state appointed surveyors and municipal workers, I look at how the act of producing this high resolution map involves not just moving between the landscape and the high resolution image; instead, it connects images and maps, reports and survey regimes of different kinds. The production of the CRZ as a geographic entity, or zone, happens through the production of numerous other images and apparatuses.

In the last section, I step back to trace the shift towards neoliberal planning and ecological "management." This shift parallels the emergence of the idea of the environment as a collection of dynamic elements like minerals, plants, marine and coastal fauna, and communities that must be managed through strategies such as re-scaled governance and public-private partnerships in order to harness their resource potential. While it is easy to imagine how things like crude oil or fisheries signify resource potential, in the aftermath of natural disasters, particular geological formations, flora, and fauna also gained importance through their capacity to mitigate the effects of these events. Consequently, mapping technologies such as remote sensing became vital to this emerging practice of ecological management because of the need to locate and identify these particular elements. These technologies offered a means of re-ordering nature through the process of visually locating and recording these elements. In tracing the creation and use of cartographic images in the CRZ, I construct an identity of the CRZ as a bureaucratic entity that is inherently visual – as

an entity organized upon a cartographic canvas which simultaneously connects numerous maps, images, institutions, officials, and coastal communities within its fold.

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Evidence, Image Resolution, and Cross-Reference

Sometime in 1981, as claimed in several reports, the Prime Minister Indira Gandhi issued a letter to different coastal state governments with instructions to ensure that no construction activity was allowed within 500 m of the High Tide Line.[8] This letter is often evoked as the genesis of the CRZ.[9] The first formal CRZ notification was released on 20th February 1991, under the Environment Protection Act of 1986.[10] The 1991 CRZ[11] notification posed uniform regulations and restrictions for all coastal states, did not mention mapping in any detail, and did not describe any project clearance or environmental monitoring mechanisms.[12] The 2011 CRZ is drastically different from this first notification. It sought to distribute power to states and introduced the idea of "managing" the coast based on the environmental and developmental profile of that region. It also set up project clearance mechanisms and laid a much greater emphasis on the need to map the coast and produce high-resolution plans.

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[8]   For instance see: Singh, Jai S. 2013. Coastal Ecology: Development, Directions and Dimensions. *Maritime Affairs: Journal of the National Maritime Foundation of India* 9(1): 1–29.

[9]   Though none of the reports or articles cite the letter in its entirety or point to a primary source.

[10]   The CRZ was released under sub-section (1) of section and clause (V) of sub-section (2) of section 3 of the Environment (Protection) Act, 1986 which gives the Government the power to release notifications "for the purpose of protecting and improving the quality of the environment and preventing, controlling and abating environmental pollution" and for coordinating their ecological efforts across different states.

[11]   I differentiate between different CRZ notifications by their year of release (1991 CRZ, 2011 CRZ), a convention that is followed in government documents and reports.

[12]   The 1991 CRZ notification can be found on the MoEF website at: http://moef.nic.in/divisions/iass/notif/crz.htm

This section examines the significance of image resolution and the use of maps as evidence in courts of law. I look at how the combined outcome of court cases over property and an "environmentally pro-active" judiciary set a precedent for making higher resolution maps. However, I also suggest that apart from fulfilling the need to "see" the CRZ at a higher resolution in order to solve conflict over property, this mapping process also embeds the CRZ within other documentary and survey regimes by cross referencing these surveys within the 2011 CRZ maps. I show how this cross-referencing, combined with the new form of the map, allow the CRZ to emerge both as a territorial and a bureaucratic entity.

In the 1991 CRZ, the parts of the coast that would fall under its jurisdiction were defined as:

"...the coastal stretches of seas, bays, estuaries, creeks, rivers and backwaters which are influenced by tidal action (in the landward side) up to 500 meters from the High Tide Line (HTL) and the land between the Low Tide Line (LTL) and the HTL." [13]

The area that would be regulated under this law was entirely defined in terms of tidal action:

"The distance up to which development along rivers, creeks and back-waters is to be regulated shall be governed by the distance up to which the tidal effect of the sea is experienced in rivers, creeks or back-waters, as the case may be, and should be clearly identified in the Coastal Zone Management Plans." [14]

While the central government (through the MoEF) was responsible for drafting the notification, the responsibility of implementing the policy was delegated to each of the coastal states.[15] Each of the states was directed to set up a "Coastal Zone Management Authority" (CZMA) consisting of a body of experts and officials who would oversee the implementation process.

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13   MoEF. Coastal Regulatory Zone Notification. 1991. Gazette of India, Extraordinary, Part-II, Section 3, Sub-section (ii).
14   MoEF. Coastal Regulatory Zone Notification. 1991.
15   India has a total of nine states, two union territories, and two island territories, and 69 districts from these states and territories line the coast with a total population of 560 million people. Approximately 20% of the total land area that is classified as "coast" -- 3,287,263 km² -- is thought to be affected by erosion. For basic data on the coast, see: http://iomenvis.nic.in/ Last accessed: 17 March 2015.

The 1991 CRZ was further divided into four categories: all ecologically sensitive areas (like mangrove forests) and the inter-tidal zone would be classified as CRZ-I; urban areas that had already been developed by the time of the notification (such as shorelines of cities like Mumbai) would be classified as CRZ-II; areas that could not be classified as either ecologically sensitive or developed would fall under CRZ-III, and a special provision was made for the islands that were not a part of the mainland, and these were classified as CRZ-IV.[16] Based on these classifications, the state suggested a number of regulations regarding all kinds of construction activity (including expansion and repairs), and introduced curbs on building or introducing any new industry along the coast (with exceptions such as building ports and, interestingly, setting up nuclear power plants).[17]

As is perhaps evident from the definitions in the 1991 CRZ, the implementation of the policy depended on identifying and demarcating the High Tide Line as the extent of the CRZ and its sub-zones are only comprehensible in relation to this line. However, in the very first notification, the government did not specify any method, scale, or mapping criteria for identifying the High Tide Line (HTL). It was only in 1994, in an amendment published by the MoEF, that a directive was issued to the state governments to prepare Coastal Zone Plans based on maps approved by the Survey of India within a period of one year and in accordance with the guidelines specified in the notification:

"The coastal States Union Territory Administrations shall prepare, within a period of one year from the date of this Notification. Coastal Zone Management Plans identifying and classifying the CRZ areas within their

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16   The 2011 CRZ follows a similar general classificatory format with some critical changes regarding the classification of fishing villages and urban land that I discuss in the next chapter.

17   For a detailed overview of classification see the 1991 CRZ Notification by MoEF. For a comprehensive summary, classification structure, comparative study, and clearance mechanism under the current 2011 CRZ see Purohit Sushmita and Markus Till. 2013. India's Coastal Regulation Zone Notification 2011-Tipping The Scales Towards Environmental Sustainability? *9/1 Law, Environment and Development Journal. p. 13.* available at http://www.lead-journal.org/content/13013.pdf

respective territories in accordance with the guidelines given in Annexures I and II[18] of the Notification and obtain approval (with or without modifications) of the Central Government in the Ministry of Environment & Forests." [19]

The only specification for identifying the coastal zone in the 1991 CRZ was through the High Tide line, and the zone was simply offset as a parallel line at a radial distance of 500 m. In her report on the process of rehousing those displaced by the 2004 Indian Ocean tsunami, Arthi Sridhar writes that this manner of identifying the CRZ did not take into account any land features such as mountains or cliffs, but simply denoted the HTL as a line that was traced on a cartographic map as from a bird's eye view, thus flattening and disregarding topographic features (see Fig.2).[20]

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18   Annexure I deals with the classification of the CRZ and development regulations for each category and Annexure II outlines the building and development regulations for activities permitted in the CRZ, such as hotels and beach resorts.
19   1991 CRZ, Section 3, part (3) (i)
20   Sridhar, Aarthi. 2005. Statement on the CRZ Notification and Post-Tsunami Rehabilitation in Tamil Nadu. ATREE
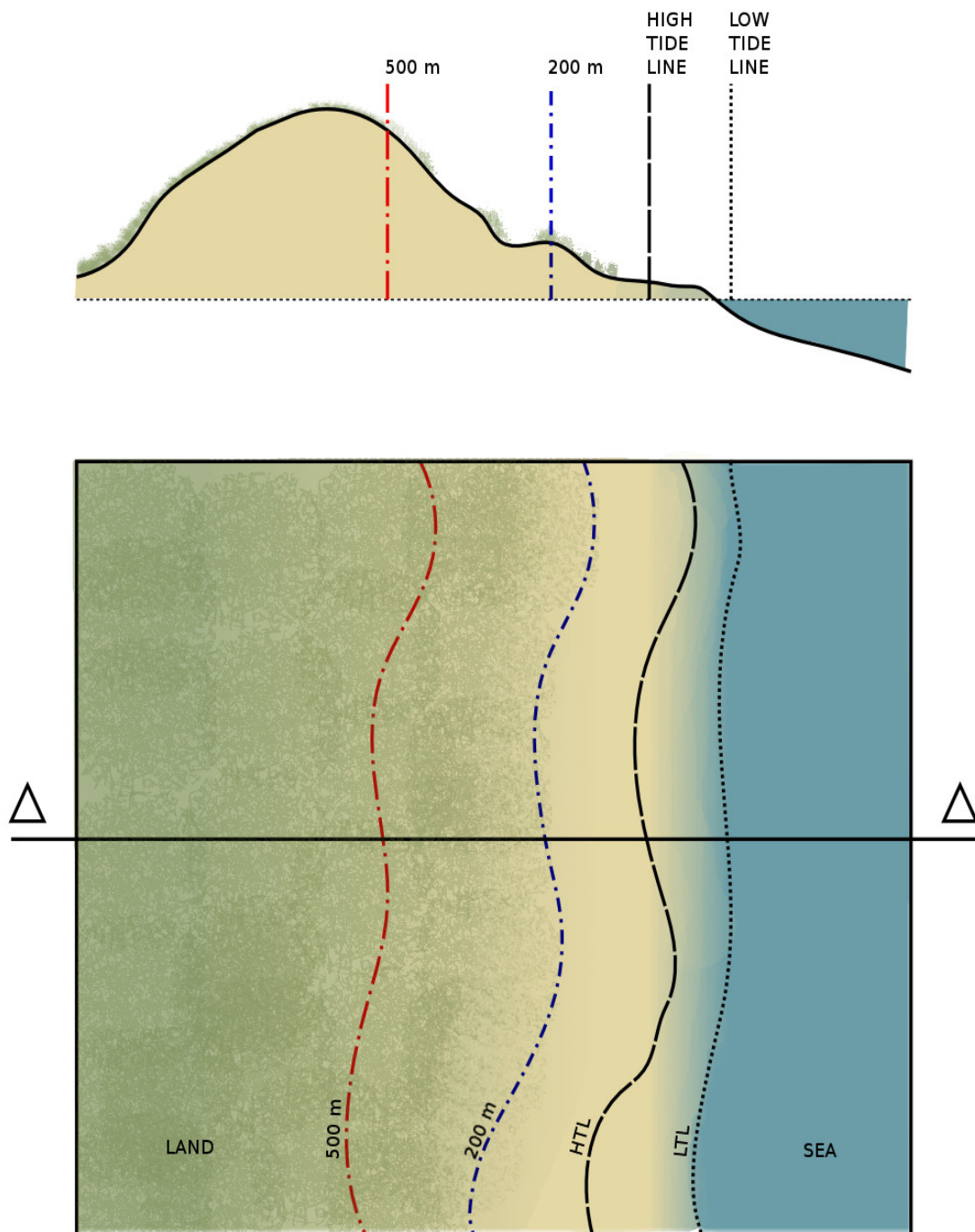
Figure 2: This diagram explains how the CRZ is offset as a set of lines that are drawn in relation to the High Tide Line upon a cartographic map. Once the HTL is marked, the lines are simply offset without taking into account topographic features along the coast. Data source: 1991 CRZ.

Despite MoEF's specification that the plans had to be prepared within one year of the notification, it was not until 1996 that preliminary plans were produced by each of the states. These plans were prepared only after the Supreme Court of India passed a judgment in a Public Interest Litigation case, *Indian Council for Enviro-Legal Action v. Union of India*[21] in that year. The petitioner in the case, an NGO working environmental issues, argued that as a direct result of not implementing the CRZ, developments continued to be unregulated along the coast and were causing rapid coastal degradation. The petitioner argued that the Coastal Zone Management Plans were vital for protecting coastal and marine ecology and it was the failure of the states to produce and enforce these plans that was causing environmental destruction. The NGO singled out the case of one region in the state of Maharashtra where it alleged that a number of polluting industries were cleared even after the 1991 CRZ expressly forbid such industries along the coast. The petitioners pointed out that the Maharashtra government had not only allowed these polluting industries, it had allowed them as a result of failing to prepare land-use surveys of the region which would have provided a complete record of all the ecologically important areas, based on which a management plan could have been prepared. Siding with the petitioner, the court, in its judgment, called for a "proper" and detailed implementation of the law through the creation of Coastal Zone Management Plans:

"According to Clause 3(i) of the main Notification, the coastal States and Union Territory Administrations were required to prepare the Management Plans within one year from the date of the main Notification. This was essential for the implementation of the said Notification. The lack of commitment on the part of these States and Administrations, towards the protection and regulation of the coastal stretches, is evident from their inaction in complying with the aforesaid statutory directive requiring the preparation of Management Plans within the specified period. In view of the fact that there had been a non-compliance with this provision,

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21   AIR 1996 SC 1446.

this Court on 3.4.1995 directed all the coastal States and Union Territory Administrations to frame their plans within a further period of six weeks thereof." [22]

In the historic time line of the CRZ policy and its development, this case seems to stand out as it marks one of the first instances where a higher court issued a mandamus to state authorities. However, this judgment must be understood in the context of a judiciary system that took on an increasingly pro-active role in relation to cases pertaining to the environment through the instrument of the Public Interest Litigation (PIL). [23] PILs, Sivaramakrishnan writes, became an important way in which the courts could adopt an "activist persona to focus on socio-economic rights and the quality of life."[24] Though PILs were initially developed for the benefit of the marginalized and socially and economically poor public, they have become instrumental in environmental activism and protection in India. In several landmark cases, PILs became the channel through which the judiciary extended the fundamental right to life and liberty to "cover unarticulated but implicit rights such as the right to a wholesome environment" and to "pollution-free water and air."[25] Apart from issuing orders and writs of mandamus, the courts were also crucial in the creation of hybrid regulatory bodies, which were appointed to oversee the implementation of

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22   The judgment in the case was passed in 1996, the order to prepare the plans was passed in 1995. The entire judgment in AIR 1996 SC 1446 is available online: http://indiankanoon.org/doc/1818014/. Last Accessed 17 March 2015.

23   As Jamie Cassels writes, a Public Interest or a Social Action case is not a uniquely Indian creature; it exists in different forms in different countries. However, it takes on unique characteristics and trajectories in these different contexts. PILs in India "were almost entirely initiated and led by the judiciary. The movement has been widely discussed by judges in the popular press and academic literature, and it is clearly informed by strong socio-political views and commitments. Its distinctive characteristics include: a) liberalization of the rules of standing; b) procedural flexibility; c) a creative and activist interpretation of legal and fundamental rights; d) remedial flexibility and ongoing judicial participation and supervision." See: Cassels, Jamie. 1989. Judicial Activism and Public Interest Litigation in India: Attempting the Impossible? *The American Journal of Comparative Law.* 37(3): 495–519.

24   Sivaramakrishnan, K. 2011. Environment, Law, and Democracy in India. *The Journal of Asian Studies*, *70*(04), 905–928. Pg. 910.

25   Rajamani, L. (2007). Public Interest Environmental Litigation In India: Exploring Issues Of Access, Participation, Equity, Effectiveness And Sustainability. *Journal of Environmental Law, 19*(3), 293–321. Pg. 294.

those orders.[26] As we see in different examples throughout this chapter, beginning with orders such as the one issued by the Supreme Court in 1996, there were several crucial developments in the CRZ that were engineered through judgments passed in various High Courts throughout the country. In these examples, it is important to look at the ways in which maps and plans were presented as evidence (in both PILs and cases concerning private property) and to look at how accompanying concerns about image resolution and authorship are articulated.

As a result of the 1996 order, all the coastal states submitted sets of Coastal Zone Management Plans to the MoEF.[27] As per the guidelines issued by the MoEF, the plans were made using survey sheets approved by the Survey of India (SoI).[28] As a base, these plans used topographic survey sheets produced by the SoI at the scale of 1:25,000 on which the High Tide Line was plotted using data from the IRS-IA remote sensing satellite.[29] Since the early CRZ maps used the topographic scale,[30] it was very difficult to tell whether individual properties located on the edge of the zone fell under the regulatory zone. This question of resolution was raised in several court cases concerning the commercial development of properties in the CRZ.[31] For example, in 2003, a case was brought to the Kerala High Court

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26   Notably, the creation of the Central Empowered Committee, which the Supreme Court created through the Environment Protection Act (1986). K. Sivramakrishnan notes that this committee is "just one of several hybrid regulatory bodies created by higher court edict that I see as examples of the institutional forms that have emerged from civil society and higher court interactions involving environmental and related social justice questions in recent times. " Sivaramakrishnan. 2011. Pg. 911.
27   After a review process, the MoEF sent back the plans with revisions and suggestions. However, the new plans were never resubmitted.
28   This is noted in the amendment published by the MoEF in 1994.
29   Nayak, Shailesh. 2002. Use of Satellite Data in Coastal Mapping. *Indian Cartographer* 22: 147–157. Nayak notes that in the 1990s, data from the IRS series could be used to produce "base maps" at the topographic scale to show tidal action and formations such as coral reefs. A decade later, with the availability of high resolution data from newer satellites, state institutions could revise these maps to prepare plans at a much higher scale (1: 5000).
30   A topographic map is one that is made at a large scale in order to show the features of the terrain. The topographic survey sheets of India are generally made at 1: 25000 and 1: 50000.
31   At a scale of 1:12,500 8cm equals 1km. Therefore, a High Tide Line 1 mm wide would in fact become 12.5 m wide if one zoomed in to look at property level demarcations.

concerning a hospital that was allegedly built in the CRZ. The petitioner, called the "Citizens Interest Agency," alleged that the Lakeshore Hospital should not exist on the plot as the area fell under the CRZ I category *(Citizens Interest Agency vs. Lakeshore Hospital 2003 (3) KLT 424).* This category concerns protected forests and ecologically sensitive zones and there are several developmental restrictions in place. In the judgment, the Chief Justice J. L. Gupta noted that while environmental clearances had been obtained for constructing the hospital, it was difficult to ascertain whether the hospital was in violation of the CRZ regulation as the maps used by the management authority were drawn from enlarged topographic survey sheets. His judgment referred to a letter prepared by the MoEF directing the Kerala Government to prepare local level CRZ maps at the cadastral scale.[32] The case was dismissed on the grounds that the petition was premature until such a map was drawn at an enlarged scale that would clear the ambiguity regarding individual properties on a given site.[33]

While cases such as *CIA vs. Kerala* set a precedent for the production of high-resolution maps, the problem was not just about resolution or the inability to see and locate properties on a high resolution map. As other cases show, it was also about locating the CRZ on maps, plans, and surveys that had been approved by specific state authorities and institutions, thus placing the CRZ within the continuity of already recognized and legitimate governmental apparatuses. This is apparent in the cases where topographic surveys were pitted against satellite imagery from sources such as Google Earth, which had become publicly available in 2004. For instance, in *Ansari Kannoth,'Santhwanam' vs State Of Kerala (WP(C). No.12623 of 2010(S))*, the petitioner Mr. Kannoth filed a PIL against the state for

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32   Cadastral Surveys document boundaries of individual properties and their use. In India, cadastral survey sheets are generally plotted at 1:4000 scale. For a detailed history of cadastral surveys, see: Kain, Roger J. P. 1992. *The Cadastral Map in the Service of the State: A History of Property Mapping.* University of Chicago Press. (chapters 8.15 and 8.16)
33   Also see the judgment in *Institute Of Social Welfare vs. State Of Kerala* (WP(C).No. 1050 of 2010(S) on 11 February, 2011.

operating a "mangrove theme park" that he claimed was actually damaging the existing mangrove forest in the area. The petitioners also argued that the CRZ maps drawn using topographic sheets (number 66A) were incorrect as they did not specify the area the sheet represented, neither could the park's location be identified on the map. The Kerala State Coastal Zone Management Authority (KSCZMA) stated that its maps had been prepared at 1:12,500 scale and had been approved by the MoEF. At this juncture, the state government also produced Google Earth images to claim that in 2003, when the park was built, there were no mangroves on site and therefore, the theme park could not have violated any CRZ regulation as without the mangroves, the area could not be categorized as a CRZ-I zone. Ruling against the theme park the Chief Justice declared that:

"Google Earth gives only a satellite imagery and need not always having regard to the existence of clouds, etc., give a clear picture of the area. There is no reliable evidence to show that mangroves were planted in the property in question only in the year, 2004. Map No.66A itself belies that contention. Nor are we impressed by the contention that if mangroves are planted after the notification, it will not attract CRZ-I. Exts.P10 or P11 (Images from Google Earth Timeline) *cannot override Map No.66A, which is approved by the appropriate authority. We do not find reason to declare that Map No.66A prepared by the KSCSMA is arbitrary or illegal as claimed by the Society. Materials on record are sufficient to hold that the area in question comes within the CRZ-I as per Notification dated February 19, 1991 issued by the Central Government and Map No.66A prepared by the KSCZMA and approved by the Central Government."[34]*

Both the examples presented here deal with the issue of presenting maps as evidence in cases related to the CRZ. While in the first case, it appears as though the court is interested in the high resolution maps in order to verify whether a given property or plot falls within the territory of the CRZ, the second case shows that the question of "evidence" does not rest entirely on this. The point of preparing high-resolution maps is not just to reinforce the relation between cartographic representation and geographic realities, rather, it is about what kind of cartographic representations can actually come to serve as evidence. Not only does the map in question have to *show* the plot or property concerned (hence the need for a higher

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34 WP(C). No.12623 of 2010(S).

resolution), it also has to be a map that is *recognized* by the state or bear the mark of a state official authorized to publish and distribute the survey sheet.[35] As Wainwright and Bryan's study of indigenous counter-mapping in Nicaragua and Belize show, independent mapping projects have to bear the marks of contracts, reports and studies in order for those maps to gain legal recognition.[36] Similarly, though the Google Earth images provide a "photographic" image of the areas in question, these are often not accepted as evidence because neither is the CRZ (as a zone determined by the HTL) demarcated in these images, nor do the images themselves carry any marker of approval, legitimacy, or sanction from a state institution.

In looking for these markers of recognition, the courts try to trace what Veena Das calls the "signature of the state;" the stamps, notes, and other marks that a map or any other document accumulates in its passage through a bureaucratic institution as it changes hands between officials and moves between desks, or those that are usually placed upon it when a document copy is released through a public institution.[37] This mode of locating the CRZ within different documents that bear the signature of the state is one that also simultaneously grants the CRZ its own bureaucratic legitimacy. That is to say, if one were to take the process of making high-resolution maps as what Foucault calls "veridiction" or a truth claim, then those claims are only possible (or only acquire force) through a simultaneous process of establishing a relationship and some kind of continuity with existing

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35   In any kind of boundary dispute, maps that are authorized by the state carry much greater weight than independent surveys. Lee gives an account of the relevance of the form, content, and source of maps in international tribunals and frontier disputes here: Lee, Hyung K. 2005. "Mapping the Law of Legalizing Maps: The Implications of the Emerging Rule of Map Evidence in International Law." Pacific *Rim L. & Pol'y J.* 14: 159.

36   Wainwright, Joel, and Joe Bryan. 2009. "Cartography, Territory, Property: Postcolonial Reflections on Indigenous Counter-Mapping in Nicaragua and Belize." *Cultural Geographies* 16 (2): 153–78.

37   Das, Veena. 2004. "The Signature of the State: The Paradox of Illegibility." *Anthropology in the Margins of the State*, 225–52.

survey records.[38] In other words, it is not enough that a map record the landscape in great detail, but it also has to establish its authority through other documents published by the state. Thus, the process of locating and delineating the CRZ within these different survey sheets, property record databases, and topographic surveys is a process by which the CRZ as a territory comes to life through the relations that are constructed between that territory and other documentary regimes.[39] It is a process by which the CRZ is not only embedded into existing bureaucratic discourses such that it appears as though it was in many ways already *there* and needed merely the act of inscribing a set of lines on existing survey sheets.

In locating the CRZ within other governmental documents, the CRZ itself emerges as what Latour calls an "object institution," as an organization composed of both humans (state officials) and "artifacts" (other documents such as surveys).[40] Here, it is these artifacts that are crucial to the emergence of the CRZ as a bureaucratic entity. The act of embedding the CRZ within other documentary structures and schemes and of creating new relations between these documents (like between the CRZ and a property record, for instance) thicken its existence both as a territory and as a governmental apparatus, and grant it bureaucratic agency from which it derives the capacity to act as evidence. This thickening is evident in a comparison of two CRZ maps. Both maps depict the same area in coastal Tamil Nadu; however, they are drawn many years apart.[41] The maps show the coast in the northernmost part of Kancheepuram District in Tamil Nadu. I suggest that each of these

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38 Foucault, Michel. 2014. *Wrong-Doing, Truth-Telling: The Function of Avowal in Justice*. Edited by Fabienne Brion and Bernard E. Harcourt. Translated by Stephen W. Sawyer. University Of Chicago Press.

38   In Chapter Five, I examine the way the CRZ works as an apparatus of security, territory, and discipline simultaneously, and how the points of conflict occur around disciplinary mechanisms of zoning, housing, and land regulation. Here, I only focus on the construction of the official map document.

40   Latour, Bruno. 2009. "A Collective of Humans and Non-Humans Following Daedalus's Labyrinth." In *Readings in the Philosophy of Technology*. Ed. David M. Kaplan. USA: Rowman & Littlefield Publishers Inc. 156-168

41   All CRZ maps are available through the Govt. of Tamil Nadu, Dept. of Environment website: http://www.environment.tn.nic.in/

maps functions as a different kind of "graphic artifact" – a term I borrow from Matthew Hull.[42] Hull uses the concept of graphic artifacts to study the communication governmental documents enable not just as a result of their content, but also as a result of their material condition and form.

The first map, approved in 1999, inscribes the coast as a thin set of lines on a blueprint traced from a topographic survey sheet (Fig. 3).[43] A light mauve wash indicates the Bay of Bengal on the east. A series of lines indicate different limits in the CRZ such as the High and Low Tide Lines, the 200 and the 500 m marks along with existing creeks, roads and major highways. The different sub-zones within the CRZ appear as bright yellow and green washes over areas hatched in different textures. Apart from the washes, small corrections in ink and ballpoint pen and marks seem to stand out. The rest of the information seems to take on a certain quality of flatness or similitude – an outcome of uniformity of the stenciling, which is enhanced by the blueprint process that renders everything in tones of one color.

In sharp contrast, the new map, which is plotted on a sheet of bright white paper, shows the landward side of the coastal zone in much greater detail (Fig.4). A creek, invisible in the old sheet, shows up in bright blue along the coast, as do individual plots that are clearly identified by their numbering (see comparison in Fig. 5 and 6). While the new map deletes certain information, such as the presence of coral reefs and estuaries, it connects the CRZ with a number of other infrastructures and databases. Networks of red lines indicate district roads and railway lines; revenue sources such as saltpans and agricultural plots begin to appear. This difference is most apparent in the index of each map: In the older map the

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42   Hull, Matthew S. 2012. Government of Paper: The Materiality of Bureaucracy in Urban Pakistan. Berkeley: University of California Press.
43   Source: http://www.environment.tn.nic.in/images/maps/Kan%20map/approved/app4.jpg. Last accessed: 29 July 2014

index refers to the particular topographic survey sheet that the surveyors used to draw the CRZ, shows a key to the state districts, and simply states that "village boundaries have been marked approximately" (Fig. 7, 8, and 9). The index of the new map embeds the CRZ in a number of other survey and enumeration projects. Not only does it link the CRZ to cadastral survey records, it also connects it to more recent satellite surveys, the topographic survey records, recent satellite data on tidal action along the Indian coast, includes the older CRZ map that preceded it and a key map showing the extent of every village in the district (see Fig.10). While the new map does show the CRZ in a much higher detail, I believe this emphasis on resolution obscures other concepts that animate the CRZ mapping process. The idea of resolution must be understood in relation to other references that show up in the new map. The presence of these references combined with higher resolution and property details allow the new CRZ to function as different kind of graphic artifact, perhaps one that has more agency, authority, or communicative capacity. Simultaneously, the CRZ comes into being as a result of this change of form and content of these graphic artifacts— despite their virtuality—both as a territory and as a bureaucratic entity. In the next section, I look at the process of drawing these high-resolution maps through ethnographic encounters with state appointed surveyors who were commissioned to map Mumbai's coastline between 2011 and 2012. This ethnography shows how the process of creating these maps is not simply one where the surveyor makes a record of features on the ground, or one where the high-resolution map is traced from a satellite image, but one where surveyors move back and forth between different kinds of images, logs, photographs, and landscape features.
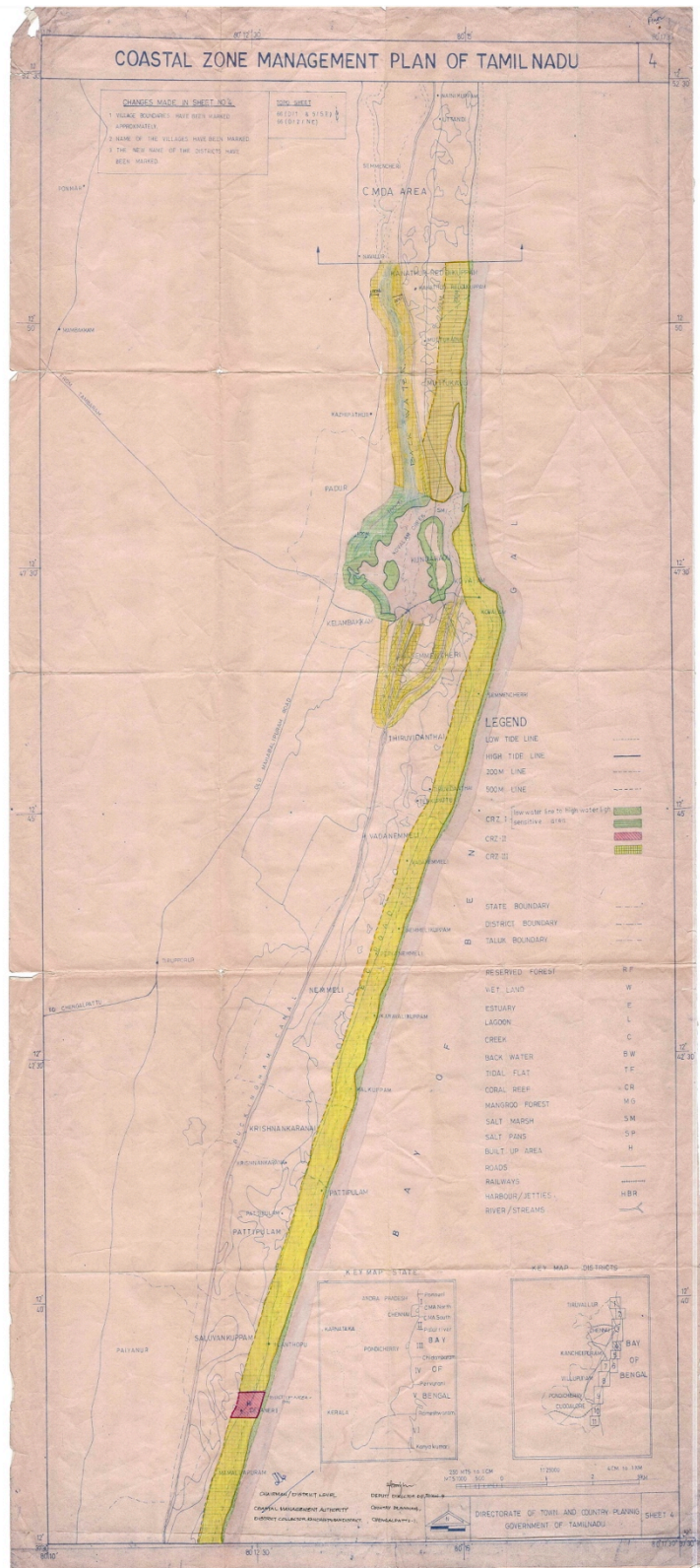
Figure 3: CRZ map of the northern part of Kancheepuram District, Tamil Nadu. Approved in 1999. Source: Govt. of Tamil Nadu, Dept. of Environment.
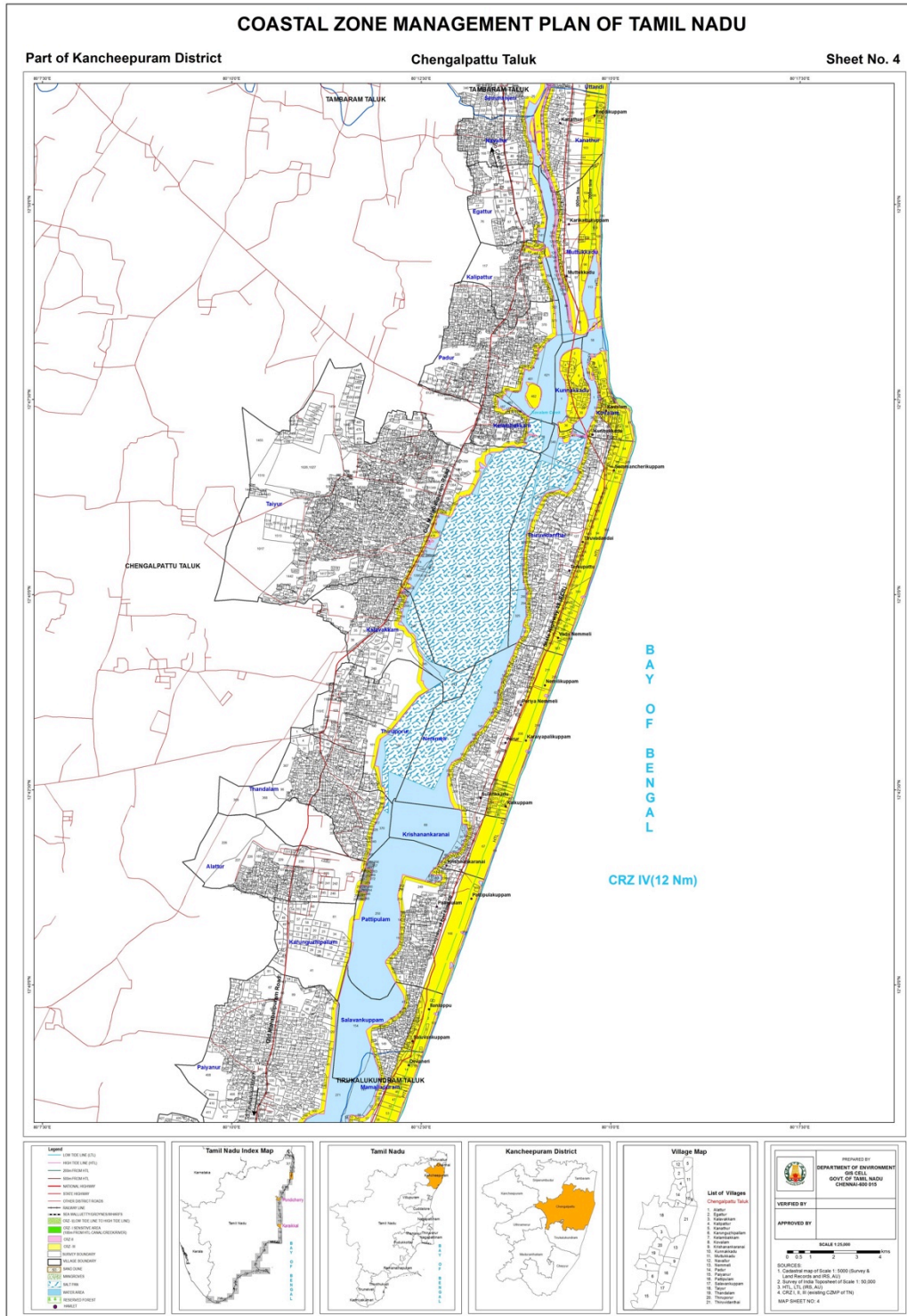
Figure 4: New CRZ map of the northern part of Kancheepuram district. Source: Govt. of Tamil Nadu, Dept. of Environment (Approval date unknown).
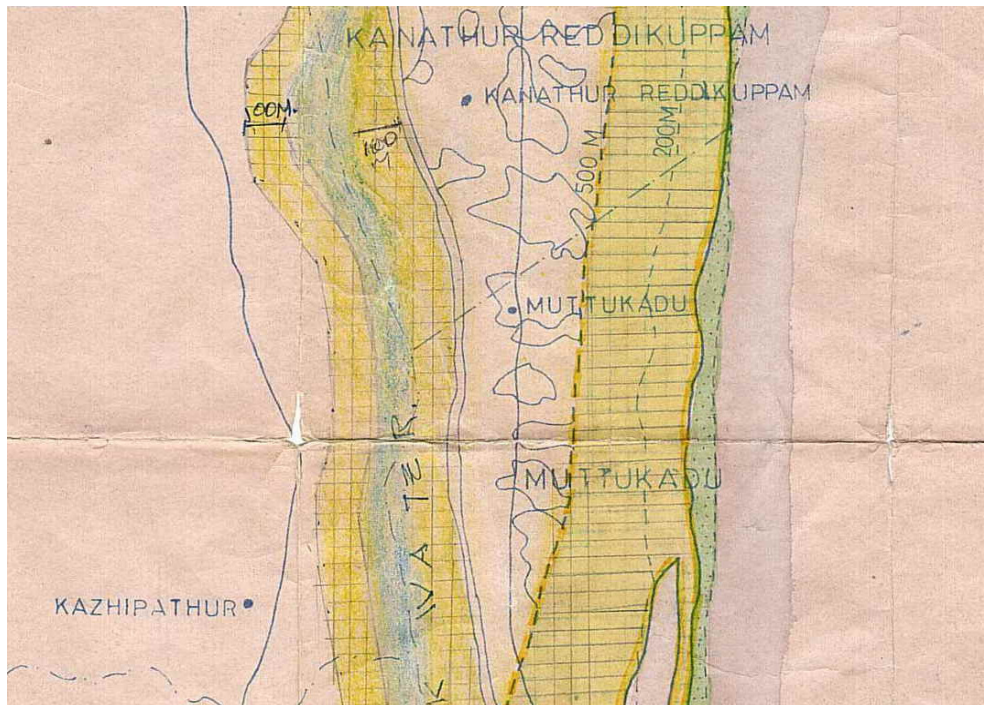
Figure 5: Detail from the 1999 Kancheepuram CRZ map.
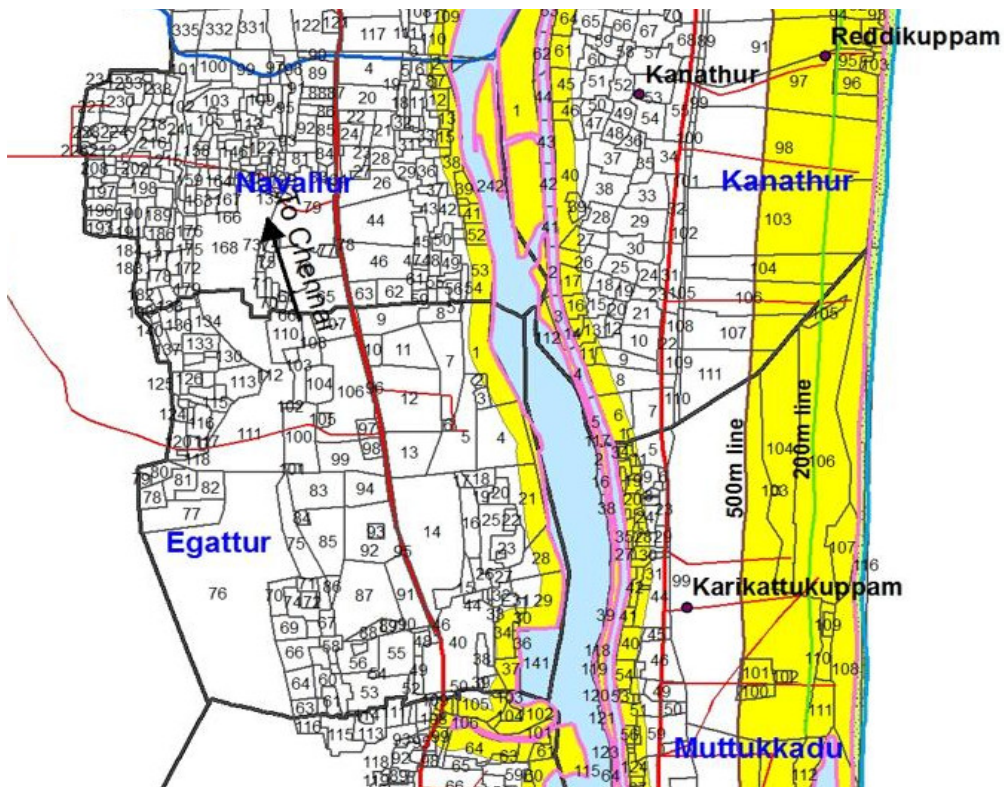
Figure 6: Detail from the new Kancheepuram CRZ map of the same area.
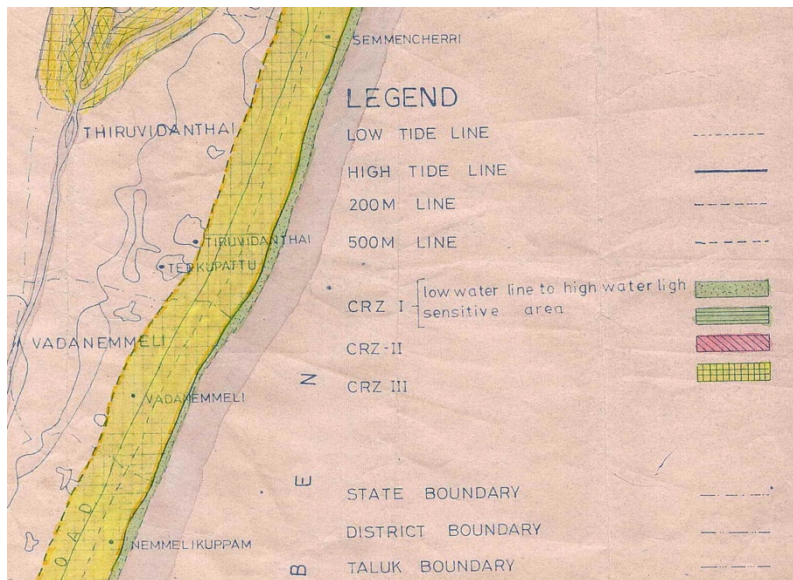
Figure 7: Detail of the legend in the 1999 Kancheepuram CRZ map.
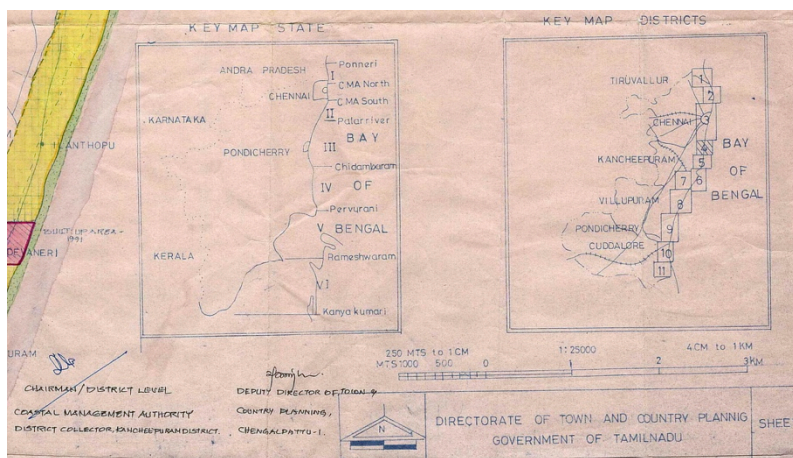
Figure 8: Detail from the index in the 1999 Kancheepuram CRZ map.
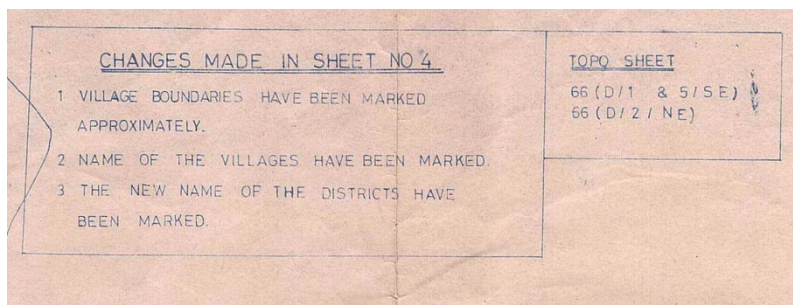
Figure 9: Remarks and references in the 1999 Kancheepuram CRZ map.
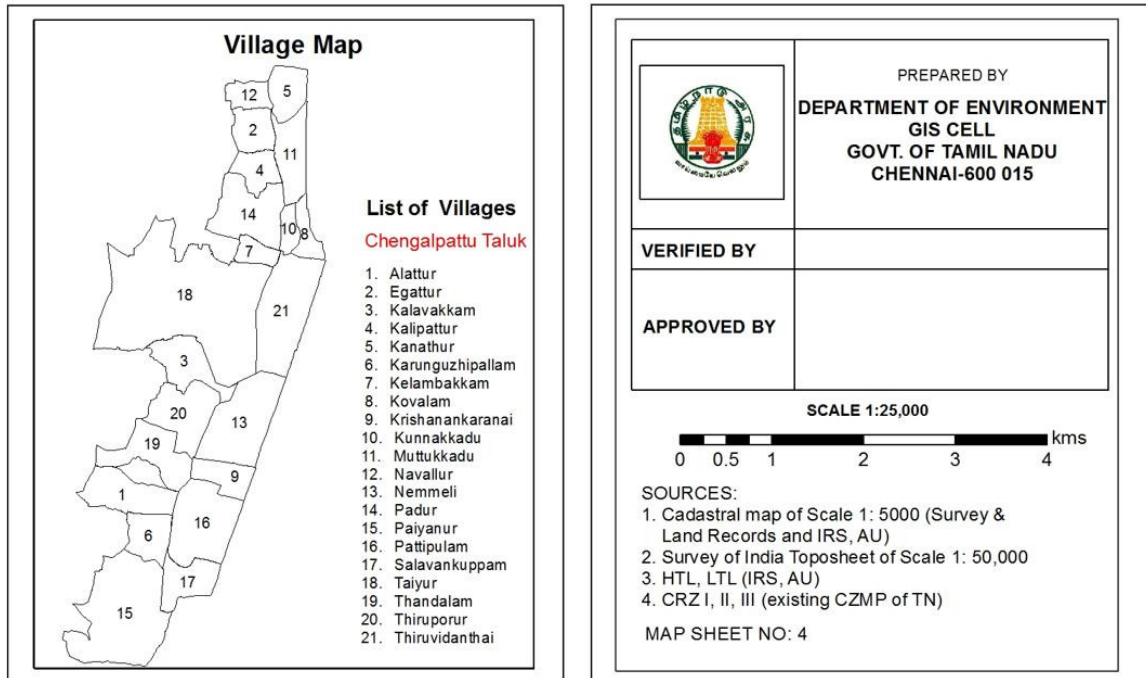
Figure 10: Detail of the index from the new CRZ map.

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Mapping Mumbai's coastline

Mid May of 2012 found me walking up and down creeks, beaches, and *nalas*[44] in the northern suburbs of Mumbai with the staff of the Institute of Remote Sensing at Anna University in Chennai. They had been commissioned by the Municipal Corporation of Greater Mumbai (MCGM) to map the city's HTL and prepare the CRZ plan for Mumbai. The team working on the project had divided themselves into smaller groups, each of which consisted of a research member from the university, one engineer from the MCGM, a temporary worker who had been employed for the week to assist in taking the readings, and lastly, a driver who would take us to different places. The engineer, Mr. Dhiren, who had arranged for me to

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44   Variously defined as gutters or rivers and streams in the city that carry rainwater out and also allow tidal waters to come in.

come along for the survey, told me that since we did not have much time to carry out the survey portion of the project, the presence of the municipal engineer was vital as it would enable us to gain swift access to areas that we would otherwise have no hope of entering.[45] The groups would meet at an appointed place in the morning from where we would branch out to take readings along particular paths. On the night before the first survey, I received a text message that asked me to arrive at a famous government hospital in the Northern Suburbs. In the morning, one of the professors in charge of the survey and a staff member explained their survey methodology, known as the Differential Global Positioning System, as we sat among a crowd of people waiting to enter the emergency room.[46] While working with this team of researcher, engineers, and surveyors, it became clear that the process of making the CRZ map involved not just a kind of oscillatory movement between the coastal landscape and the map itself, but also connected a range of visual and textual information. In order to make the CRZ map, the surveyors had to move between the landscape, different technologies and technological devices, and various reference maps and surveys, and recording systems. As Latour, Winter, and Camacho-Hubner suggest, a map should not be thought of as a singular object, but as collection of visual apparatuses and elements linked together in a long chain of production. This chain of production allows a map that is situated

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45   By the time I joined the survey, the staff had already covered much of the area in the southern parts and had surveyed the Island City area. I accompanied groups who surveyed the *nalas*, creeks, and beaches in the Northern Suburbs of Kurla, Ghatkopar, Mankhurd, Malad, and Manori among others. I would like to note here that it is fairly difficult to obtain permission to "observe" activities conducted by the Municipal Corporation and I assume that the reason I was not called to ride along earlier in the survey was because the engineer who I had been in touch with knew that my ethnographic study was focused more in the Northern Suburbs and this would be a logical way to limit my participation. Since the information on the coastal zones, the city's beaches, and creeks is generally considered to be "sensitive" data, it would make sense that my participation (as an outsider with no affiliation to the MCGM) be limited.

46   For an account of the survey methods and commentary on mapping the Coastal Zone, see: Thomas, K. V. "Setback lines for coastal regulation zone-different approaches and implications." *seminar on CRZ*. 2010.

online to "rematerialize" in this world through its connections with technological apparatuses, material objects, and actors like municipal engineers and survey officers.[47]

The team's goal was to determine and map the HTL[48] along the city's coast, creeks and inter-tidal zones (see Fig. 11-14 for a schematic diagram of this method) and compile the CRZ maps for the Greater Mumbai region. As described previously, the HTL is one of the most important factors in determining the different zones in the CRZ. Almost all zones or areas are determined and defined in relation to this line (see Fig. 2). The land that falls under the jurisdiction of the CRZ is generally defined as 500 m from the High Tide Line on the landward side.[49] In order to map this line, the researchers had divided the city into a broad grid (See Fig. 11). At the center of each grid would be a "main station," (also called a "reference station") a point for which they would establish very accurate coordinates using data from satellites. The dimensions of the grid were based on the transmission range of the devices that serve as main stations (Fig. 12). In order to establish each main station, it needed to be fixed on a rooftop or in a place where it would receive uninterrupted satellite data. Once the co-ordinates for the main station were established, the surveyors would leave the device at the location for the duration of the survey. This fixed main station acted as both a transmitter and a receiver: it received signals from the GPS satellite networks that enabled it to determine its position with a high degree of accuracy. It also acted as an antenna transmitting a signal from it to other devices (held in the lands of the surveyors in the field) (Fig. 13 and 14).

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47   Latour, Bruno, Eduardo Camacho-Hübner, and Valerie November. 2010. "Entering a Risky Territory: Space in the Age of Digital Navigation." *Environment and Planning D: Society and Space* 28: 581–99.
48   The High Tide Line is defined as the highest point to which the tide comes in, as measured in springtime.
49   This is a very basic definition that does not include provisions for creeks, inter-tidal zones, special zones or protected areas, which I elaborate later in the chapter.

Once the surveyors had set up this device, they would then proceed to take a series of "points" at different locations within the device's range. At each of these points, they would hold another device that would receive co-ordinates from the satellite and also from the main station, allowing the surveyors to gather the GPS co-ordinates for that location through a process of triangulation (Fig. 15). Each location was specifically chosen for its visibility on their high-resolution satellite map. The GPS co-ordinates from all the points would be imported into software such as ArcGIS. A high-resolution satellite image would be aligned based on these points and other features would then be plotted on a separate layer.
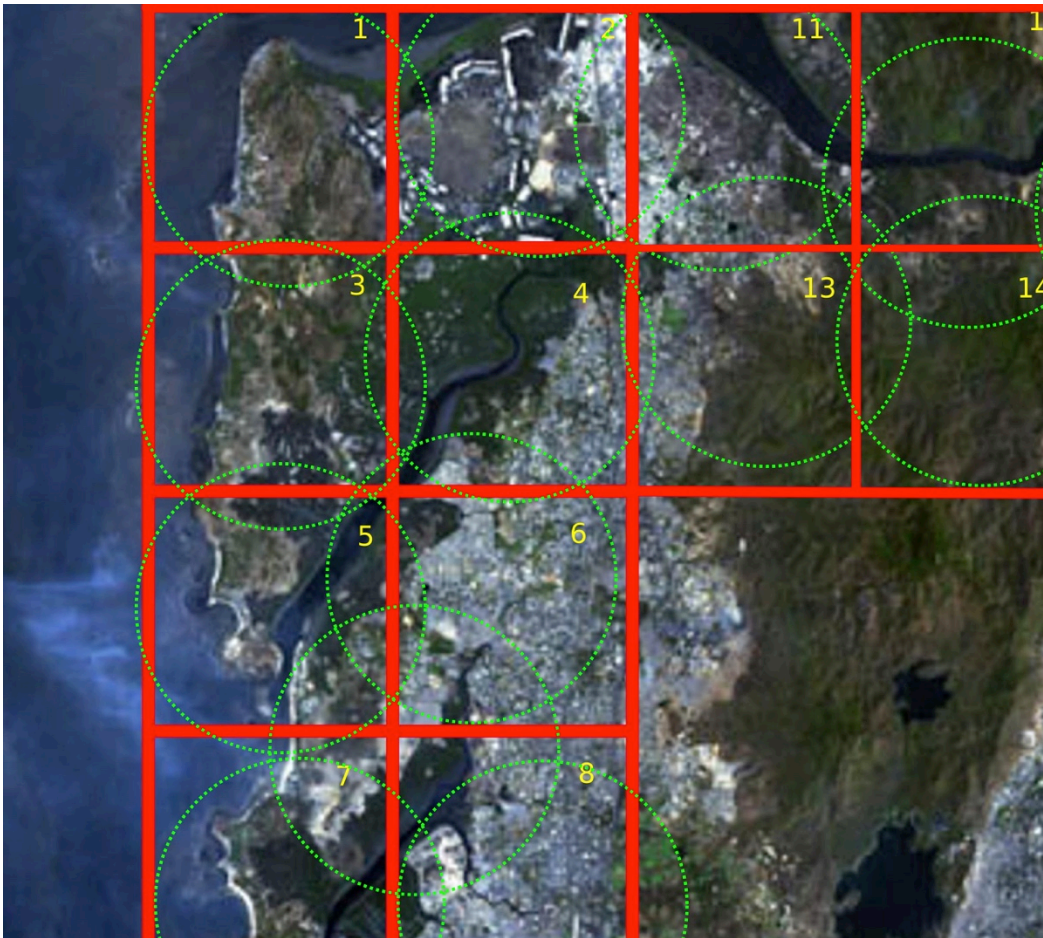
Figure 11: The coastline of the city is divided in a broad grid (indicated in red). This grid is based on the transmission range of devices that serve as main stations (indicated as green circles). Each grid is numbered and the surveyor has a high-resolution image of each part of the grid. This is just an explanatory diagram, not a direct representation of the actual grid used by the surveyors.
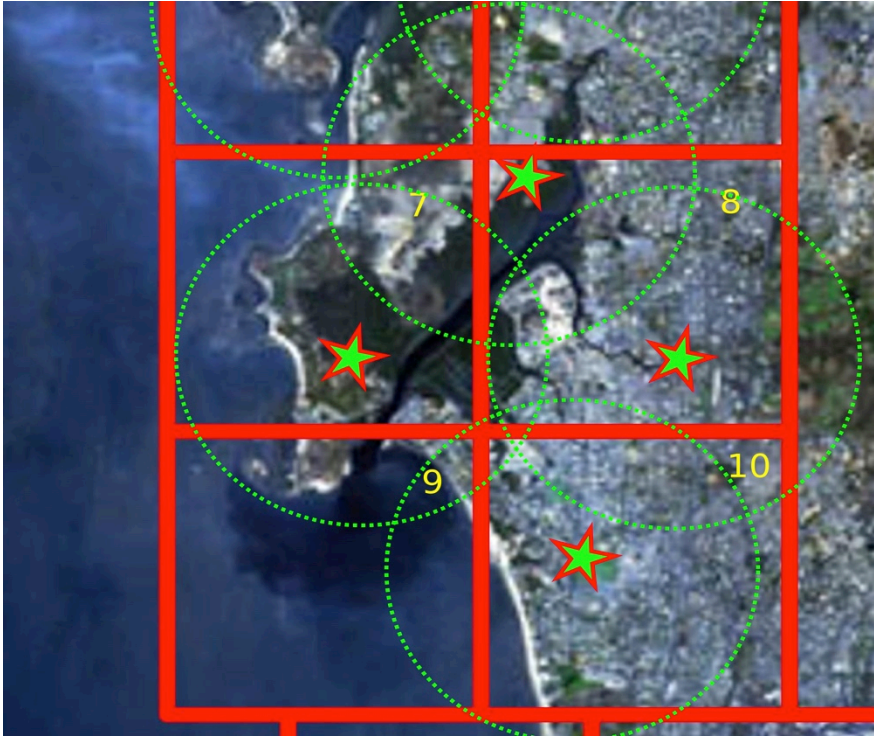
Figure 12: A main station is established (indicated by green stars) and the surveyors ensure that there is a significant overlap between the transmission range of each station.
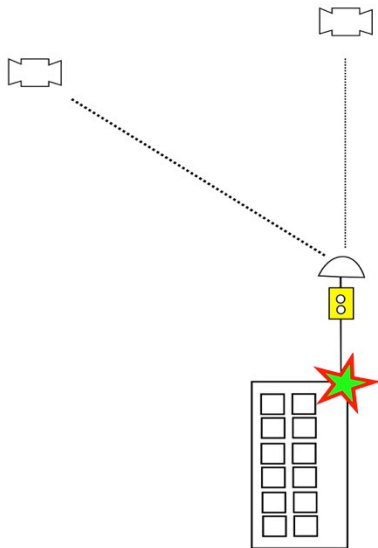
Figure 13: At a suitable location, usually on the rooftop of a tall building, a main station is established. This main station receives satellite data from a cluster of satellites that allows the surveyors to record its position (its GPS co-ordinates) with a high degree of accuracy.

Figure 14: This picture shows the team of surveyors from Anna University in the process of establishing a main station on a terrace.
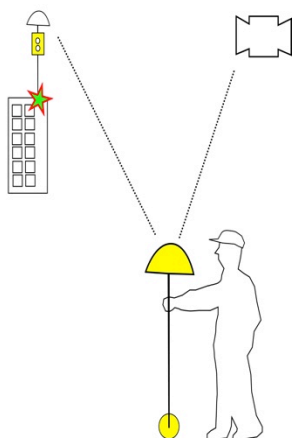
Figure 15: After establishing the main station, the surveyors go into the field with hand held devices. They use these devices to establish the co-ordinates of points and paths long the coast.

Every part of the process of producing a high-resolution map entailed a complex back and forth movement not just between the landscape and the reference map, but also between a series of different images and documents. Decisions regarding the location of survey points were influenced not just by accessibility, but also on the basis on the point's "legibility" on the satellite image used for reference in order to reduce the amount of interpretation required while transferring or recording a point on a map. Thus at every level, the surveyor was not just thinking about the point to be mapped, but also about how it would appear and be recorded on the map, and how to record the most legible points which in turn would produce a highly legible map.

For instance, as the first station was being established on the roof, Mr. Dhiren unrolled a large satellite map on the parapet. "I think we have to do 28 and 29 today," he said, indicating the grid numbers on the map. As Mr. Dhiren was looking at the map, he was joined by the professor heading the survey. He appraised the map and pulled out two more maps that showed the same areas at a higher resolution and looked at them for some moments before pointing to a series of locations on the map and began marking them as potential areas to survey. He then passed the high resolution maps over to Mr. Dhiren who carefully went over the selection of points to exclude ones that would be hard to access, after which they were distributed to the teams who would survey different areas (Fig. 15).

As his research associate Anbu and I set off, Anbu opened up the map and surveyed the path we would follow. "These are great points," he said, referring to the points the project head had picked. "These points will be easy to spot later on the map...and also, if we go by his selection, we can get everything done quickly." In their selection of points and paths to survey, the surveyors like Anbu were not just looking for places that they could get

to easily, they also wanted to ensure that those points were legible on the satellite image (which they were using as a reference), and that such a point would be easy to plot on the CRZ map that they would have to make once the survey was complete.

As Anbu began plotting survey points in the field, he would constantly look for points that stood out in the chaotic landscape. For example, on the first day he spotted the entrance to series of tennis courts and went up to the watchman at the gate. After about fifteen minutes we were ushered into an area where a number of tennis courts were situated behind high chain link walls. Anbu walked into the tennis court nearest to the gate and then positioned the instrument on one corner of the court. At the point where two white lines of the tennis court intersected, he placed the receiver. He motioned me to come over and hold the receiver as he marked the point on the map we were using as a reference. "See this" he said, as he held the map and pointed his finger at the court. Then he neatly circled the corner where the receiver was now planted. "Now I will have no problem identifying this point later," he said (Fig. 16 and 17). On another day, as we were taking the reading at a municipal garden where the jogging track turned at perfect right angles, Anbu fiddled with the instrument and handed the antenna over to the assistant instructing him to stand very still in order to register the reading (Fig. 18). Then gazing into the distance, he said, "When I go back and start working on the computer, I will remember this place and where I was standing when I took this point. Sometimes it just comes back, and you know exactly where the reading was taken... of course, you also record it because you cannot carry everything in your head and there is no guarantee who will work on which part of the map...In the same way, when I am taking a reading during the survey, I have to think about what that image will be, or what that point will be on the screen". In marking survey points, Anbu had to think about correctly marking a point in the reference image and the ground and,

simultaneously, think about how that point would appear once he (or another team member) began working on the map. Thus, the task of conducting a survey entailed a leap of imagination not just between the map and the landscape, but also between several other images, some of which, such as the final CZMP, were yet to be drawn.

Surveyors like Anbu also rely on records that are entered at every point. Anbu was a meticulous record keeper, which he maintained in a large booklet he carried along with him. As the municipal worker held the GPS device, Anbu would juggle the reference map and the booklet (see Fig. 19). In the booklet, he would record the height at which the reading was taken and a short description of the location that would allow him to recognize the point at a later date. He explained that since a team of people undertakes projects like the CRZ map, it was important to maintain a detailed log of all points in a manner identifiable by other surveyors. If, in the future, there was any doubt about a surveyed point, any team member could look up this log to avoid potential errors (Fig. 20 and 21). Throughout the survey, the selection of points followed a logical positional and visual pattern: not only were they points within the transmission radius of the station, but also points that stood out on the ground and, correspondingly, on the image, stripping away the need for interpretation as much as possible. Corners were better than curves, high contrast was better than low, and corners of unique features were preferred to those of repeated elements.

Figure 3: The survey team discusses the areas and paths to survey. In this picture, they are consulting high-resolution satellite images in order to pick out points to survey while talking to engineers who have an intimate knowledge of the area. The map with the survey grid is under the sheets with the satellite image.

Figure 4: A survey team member holds the GPS device to record the co-ordinates of a point on the corner of a tennis court. In order to get the co-ordinates, the instrument has to be held perfectly still for several minutes. At his feet, one can see a reference map indicating all the roads in the area.

Figure 5: Surveyors have to move between choosing and recording the point, recording it on a reference map, and maintaining a log in a booklet. At times, the surveyors would also take a picture of the area for their records.

Figure 6: Anbu takes notes while the other team member holds the GPS device. On the ground one can see the high-resolution satellite image used as a reference map. As the assistant records the point, Anbu also marks out the corner of the tennis court on this satellite image.

Figure 7: Surveyors make a record of all points on reference maps and on a log sheet.
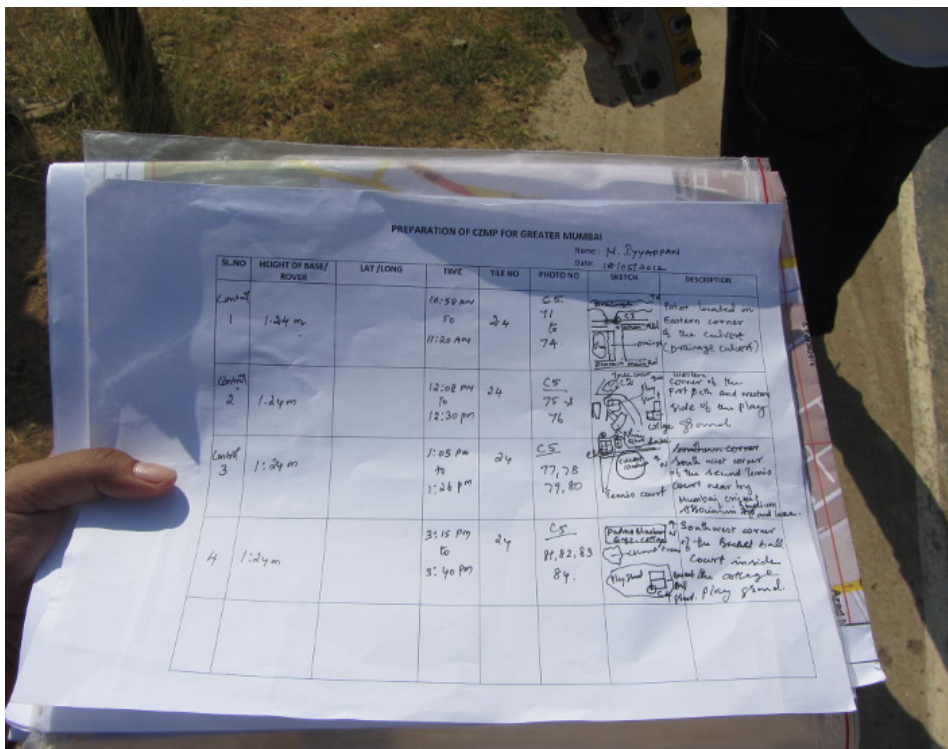
Figure 8: A view of the booklet maintained by the surveyors. The log sheet records a description of the location, its height from the ground, and the surveyor also draws a small diagram that visually describes the point.

A few days later, I was walking down the beach with Senthil, another surveyor in the team. This time we were dispatched to survey the coastline along the northwest suburbs. Instead of recording the GPS co-ordinates of discreet points, our task was to take the co-ordinates of a series of points along a path tracing the coast. This path would record the line marking the highest point where the spring tide regularly reached. Once this line was recorded, the team would then trace and mark as the HTL on the CRZ map. As we were traveling in the car, Senthil explained that in many areas, it was difficult to discern the High Tide Line on the high-resolution satellite map. We would have to walk along the beach to take readings at intervals and use this method to resolve ambiguities in the satellite image. For example, on the high-resolution image, there were a number of small blue squares along the beach. Senthil needed to find out whether these blue square were built structures, in which case he would record that on the map, or whether these were just large pieces of tarp that are sometimes used when drying fish, in which case as temporary materials on the beach, they would not be recorded.

Our survey required us to begin from a southern point along Marve beach, starting from a section of the beach that was cordoned off as part of a military base. From here we began the long task of walking along the coast and verifying features on the map that Senthil and the others could not directly identify, such as pieces of tarp and other structures used for drying and storing fish (Fig. 22 and 23 A and B). As we walked along the beach, Senthil would make notes about particular features. For instance, in order to map the High Tide Line, Senthil used the flora along the beach as a guide. At times he would pause to examine a vine snaking through the sand or a clump of green poking out from the ground (Fig. 24). "These mangroves indicate where the tide comes up to," he explained. "By looking at them I can understand the extent to which the water comes in. Apart from that, it is also easy to

observe these lines on the high-resolution satellite map. But we cannot simply rely on the image; we must walk on the beach to understand what the image tells us…Same way, we also have to refer to the satellite image from time to time in order to understand what we are surveying and where we are on the ground… this way the degree of error can be reduced." He pointed to the map he held in his hands as he walked. "As we are walking along the beach, I am making notes on the map that I will use later… then I can recall each point, and this also serves as reference for making the CRZ map. Then we will register the base map that they (the MCGM) will provide, and then use the satellite data and the readings from points to draw out the High Tide Line. All this will be done at very high resolution. Because of this groundwork, it will be very accurate…We have to perform cross checks constantly and keep detailed notes because it is not one person making a map, there are several. And to make CRZ map we will go through all these records and put together all the data from different sources." As we trekked along the length of the coast, Senthil would sketch particular features along the coast onto the satellite image (Fig. 25).

Figure 9: The survey team walks along the coastline to determine the HTL.

Figure 10 A and B: A surveyor records the HTL along the coast. Temporary structures like tarp or unused toilets are crosschecked during the survey.

Figure 11: Senthil looks for particular botanic species as an indication of the HTL.

Figure 12: While mapping the HTL, the surveyors maintain a sketch of the features along the coast on the reference map.

While this conversation reveals the dynamic relation between the map, landscape, records, and a series of other images in the act of making a survey, it also reveals the importance of this dynamism in creating a highly accurate map. It is only through a constant move between the images, records, and the landscape, that errors can be corrected, ambiguities cleared, and lines drawn. With every move and at each stage in the survey process, there is a great deal of care that is taken to manufacture that legibility, which begins with the careful selection of points that stand out in the terrain and the satellite image, in the manner in which those points are recorded through the GPS instruments, in the written notes and records, in the passage of information between different members of the team of surveyors, and in mobilizing a whole range of visual information.

Though I did not have the opportunity to track the process of making the plan back in the lab, from the presentations and reports made by the organizations that have conducted the CRZ survey in different parts of the country it is evident that this stage of making the map also involves working through and connecting images and data from various different sources.[50] Fig. 25 describes the process of putting together one small section of the CRZ map. As the diagram shows, each step in the digital process brings together different databases and the physical marks, traces, and logs that were created in the survey process and are reinscribed on to the digital platform. However, this digital information is not confined to the space of the online platform, but rather, as the next section shows, crops up as material traces in the landscape.

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50   Ramesh, R., P. Nammalwar, and V. S. Gowri. 2008. "Database on Coastal Information of Tamil Nadu." Report Submitted to Environmental Information System (ENVIS) Center Department of Environment, Government of Tamil Nadu, 1–133.
See also: Dwarakish, G. S., S. A. Vinay, S. M. Dinakar, Pai B. Jagadeesha, K. Mahaganesha, and Usha Natesan. 2007. "Integrated Coastal Zone Management Plan for Udupi Coast Using RS, GIS and GPS." In *Remote Sensing*, 67430D–67430D. International Society for Optics and Photonics.
http://proceedings.spiedigitallibrary.org/proceeding.aspx?articleid=823680.

Satellite image

Image is geo-referenced

District boundaries are put in

Cadastral survey map

Cadastral survey geo-referenced on to satellite image

High and Low Tide lines are drawn

Boundaries and locations of mangrove forests

CRZ areas are demarcated
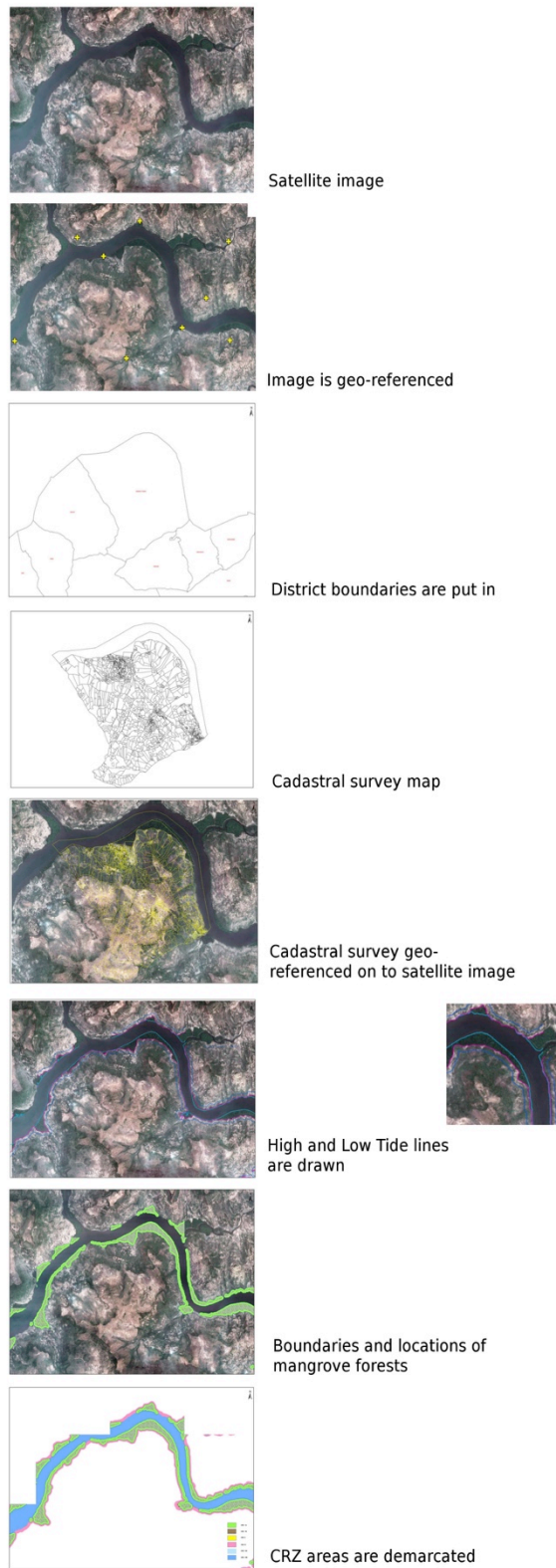
Figure 13: Process of digitizing the CRZ map. Data source: www.cseindia.org

Coastal "Management" and the Impact of Natural Disasters

The concept of "protecting" or "conserving" the environment was incorporated into the India Constitution via the 42nd Amendment Act in 1976.[51] In Article 48A, the responsibility of protecting the environment was given over to the central government: "The State shall endeavor to protect and improve the environment and to safeguard the forests and wild life of the country." Along with this, article 51A of the chapter titled "Fundamental duties," also framed the protection of the environment as the responsibility of each individual citizen: "It shall be the duty of every citizen of India…to protect and improve the natural environment including forests, lakes, rivers and wild life, and to have compassion for living creatures." Besides both these additions, the entries of "Forests" and the "Protection of wild animals and birds" were moved from the "state list" (entities over which each of the states have jurisdiction) to the "concurrent list" (entities over which both the state and the Union/center have jurisdiction).[52] [53] Though this amendment made environmental protection the responsibility of both the state and the citizen, there was some criticism regarding the amount of power this amendment gave the center over the individual states in matters regarding the environment.

Within the central government, environmental concerns were initially addressed through the 5th year plans. During the 3rd Fifth Year Plan (1961-66) passed by the planning commission of India, a Committee on Natural Resources was established which would

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51   R. K. Sapru, in his chapter on development of environmental policies in India writes that "The environmental policy was explicitly incorporated into the the Indian constitution in 1976 by adding articles 48A and 51A(g). There was considerable debate in the Lok Sabha (lower house of the Parliament) over these articles, but the late Prime Minister Indira Gandhi used her enhanced political power to push environmental measures through Parliament." Sapru, R. K. 1998. Environmental Policy and Politics in India. In Desai, Uday. *Ecological Policy and Politics in Developing Countries: Economic Growth, Democracy, and Environment.* SUNY Press.

52   Ramakrishna, Kilaparti. 1984. Emergence of Environmental Law in the Developing Countries: A Case Study of India. *The Ecology Law Quarterly* 12: 907.

53   Ramakrishna (Ibid) makes a note that the a "union law regarding a concurrent subject generally prevails over a state law on the same subject, thus providing some administrative uniformity throughout the country." (Page 910)

monitor and publish reports on the availability, use, and conservation of "natural resources" (this included coastal areas, forests, geology and minerals, and materials like industrial and agricultural waste).[54] However, in the subsequent Fifth Year Plan (1969-74), the Planning Commission began articulating environmental concerns as a part of its planning agenda. It phrased this need to protect and conserve in a section titled "Quality of Environment" in Chapter 2 of the plan, thus:

"The physical environment is a dynamic, complex and inter-connected system in which any action in one part affects others. There is also the inter-dependence of living things and their relationships with land, air, and water. Planning for harmonious development recognizes this unity of nature and man. Such planning is possible only on the basis of a comprehensive appraisal of environmental issues, particularly economic and ecological. There are instances in which timely specialized advice on environmental aspects could have helped in project design and in averting subsequent adverse effects on the environment, leading to loss of invested resources. It is necessary, therefore to introduce the environmental aspect into our planning and development. Along with effective conservation and rational use of natural resources, protection and improvement of human environment is vital for national well being... At present there is no point in the structure of Government where the environmental aspects receive attention in an integrated manner."[55]

While this plan articulates the need to understand the nation's physical environment as "dynamic, complex and inter-connected system," indicating the need for a comprehensive environmental policy,[56] such a policy was not put in place until 1986 when the central government (under great pressure due to the Bhopal gas disaster)[57] passed the Environment (Protection) Act. Besides the event of the disaster, the Act also sought to mitigate some of the damage caused by the excessive use of fertilizers, pesticides, and high input intensive technologies that went into the "Green Revolution," which was crucial to establishing food

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54   Government of India, Planning Commission. *Third Five Year Plan (1961-66)*. Available online at: http://planningcommission.gov.in/plans/planrel/fiveyr/index3.html Last accessed: 29 July 2014.
55   Government of India, Planning Commission. *Fourth Five Year Plan (1969-74)*. Available online at: http://planningcommission.gov.in/plans/planrel/fiveyr/index3.html Last accessed: 29 July 2014).
56   Before the establishment of the MoEF and the Environment Act (1986), India had passed the Air Act and Water Act, and had a Forests Policy, but no one policy that put forth provisions for conservation of the country's physical environment.
57   Abraham, C. M., and Sushila Abraham. 1991.The Bhopal Case and the Development of Environmental Law in India. *International and Comparative Law Quarterly* 40(2): 334–365.

security between 1960 and '70,[58] and to regulate the pressure caused by rapid growth and development across different regions.[59] The Ministry for Environment and Forests was established in 1980 and it acted as a central body that regulated, planned, and promoted environmental programs. The objectives of the MoEF were to "(i) to prepare environmental law and policy, (ii) pollution monitoring and control, (iii) survey and conservation of natural resources, (iv) management of forests and conservation of wildlife, (v) promote research, (vi) environmental education, awareness and information, and (vii) international co-operation."[60] The MoEF acted (and still acts) as the central body under which different boards (such as on waste management and pollution) were established and through which project clearance mechanisms were put in place.

Different scholars have remarked that this unequal distribution of power between the center and the states produced considerable tension in matters regarding the environment, and that the Environment Protection Act of 1986 was an expression of that unequal power. For instance, R. K. Sapru recounts that the central government used the powers conferred to it under Article 253 of the Indian Constitution (the power to make laws in line with India's international agreements and obligations) to enact the Air Act of 1981 and used the Environment Protection Act of 1986 in order to "carry out the decisions made at the United Nations Conference on Human Environment in 1972."[61] The Environment Protection Act, which extended to the entire country, defined the "environment" as not just the physical elements like air, land, and water, but also the "inter-relationship, which exists among and between water, air and land, and human beings, other living creatures, plants,

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58   Vyas, V. S., and V. Ratna Reddy. 1998. Assessment of Environmental Policies and Policy Implementation in India. Economic and Political Weekly 33(1/2): 48–54.
59   Bowonder, B. 1986. Environmental Management Problems in India. *Environmental Management* 10(5): 599–609.
60   Vyas, V. S., and V. Ratna Reddy. 1998. Pg. 49.
61   Sapru, R. K. 1998. Environmental Policy and Politics in India. In Ecological Policy and Politics in Developing Countries: Economic Growth, Democracy, and Environment. Ed. Uday Desai. SUNY Press.

micro-organisms and property."[62] Under this act the central government could assume the power to protect any part of this environment from any object or force it saw as harmful or polluting and also to take measures to improve its quality. Secondly, Chapter II this Act gave the central government the authority to initiate any other policy that would make provisions for the conservation of any part of this environment and the power to appoint authorities and regulating bodies.[63]

The CRZ notification of 1991, and all other subsequent CRZ notification, were all passed under this provision of Chapter II of the Environment Act. Under this Act, the central government used its authority to pass a notification that would provide a means of protecting the nation's coast. As a consequence, the notification was met with much speculation as the CRZ was regarded as yet another instantiation of the center's authority. In the view of scholars such as Sheila Jasanoff,[64] critics saw the Indian environmental laws "...perpetuate a neo-colonial relation between the citizen and the state, effectively denying the former any participatory rights in the management of the country's natural resources. The impetus to tighter state control seems irresistible, as for example in the 1988 amendment to the Forest Conservation Act, which makes even the afforestation of designated forest lands illegal without permission from the central government."[65]

While organizations like the International Collective in Support of Fishworkers generally supported the CRZ notification, they also criticized it for its "top-down" structure. For instance, Chardrika Sharma writes that "While it (the 1991 CRZ) recognizes the need for a Coastal Zone Authority at the State level, it fails to make provisions for stakeholder and

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62   The Environment (Protection) Act, 1986. Chapter 1, part 2 (a).
63   Bhatt, Saligram. 2004. Environment Protection and Sustainable Development. APH Publishing.
64   Jasanoff refers to a whole series of laws enacted at this time: the Environment Act (1986), the Hazardous Waste Rule (1989), the 1988 Amendment to the Forest Conservation Act.
65   Jasanoff, Sheila. 1993. India at the Crossroads in Global Environmental Policy. *Global Environmental Change* 3, no. 1: 32–52. Pg. 38.

public representation in this body. Also, while some of the draft State Plans envisage the formulation of coastal management plans at the district level, there is no attempt to make linkages with the Panchayati Raj Act and to decentralize planning and implementation to the *panchayat[66]* level."[67]

Despite the existing tensions between the central government and state authorities on different environmental initiatives and projects, this criticism of the 1991 CRZ as a top-down or center led enterprise gained force only in the late 90s and early 2000s, with the rising popularity of participatory models. Movements such as "The Kerala People's Campaign for Decentralized Planning" fueled the opposition against a central monitoring authority. [68] Moreover, in 1993, the central government passed the 73rd and 74th Constitutional Amendments which transformed the former "two tiered" system (central and state governments) to a "three tiered" system that gave local authorities like municipal corporations (urban) and *panchayats* (rural) greater power in the planning process.[69]

In the two decades between the CRZ notifications, we see the emergence of new decentralized planning mechanisms that are routed through governmental apparatuses like municipal corporations. This shift gave much greater power to local government institutions like Municipal Corporations, offered new ways for the public to participate in planning and conservation initiatives, and fueled grass-root organizations and movements. However, this move towards decentralization was accompanied and guided by economic liberalization and this meant that from the late 1990s, environmental planning policies and interventions were

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66   A *panchayat* is a rural local self-governmental body.
67   Sharma, Chandrika. 1996. Coastal Area Management in South Asia: A Comparative Perspective (Background Paper Prepared for South Asia Workshop on Fisheries and Coastal Area Management, 26 September-1 October 1996, Madras, India). International Collective in Support of Fishworkers. http://aquaticcommons.org/277/, accessed March 13, 2014.
68   Isaac, T. M. Thomas, and Richard W. Franke. 2002. Local Democracy and Development: The Kerala People's Campaign for Decentralized Planning. Rowman & Littlefield.
69   deSouza, Ronald. 2003. The Struggle for Local Government: Indian Democracy's New Phase. *Publius: The Journal of Federalism* 33(4): 99–118.

critically shaped by global capital flows and became increasingly "market oriented."[70] Several studies of recent conservation initiatives in India show how these initiatives were characterized by a re-scaling of the state's power and a "hybridization of law" where "traditional norms, national laws and policies, World Bank standards as well as international human rights and environmental regimes are recast in a new landscape."[71] These initiatives were also geared towards a "commodification of nature" promoted through eco-tourism initiatives which laid an emphasis on the importance of particular species of animals such as charismatic species like tigers and elephants, crops, or even indigenous communities.[72]

Such conceptual shifts are also evident in the case of coastal ecological policies. International conferences on the conservation and development of coasts such as the United Nations Conference on Environment and Development that took place in 1992, introduced a conceptual shift in coastal governance that mirrored other neoliberal environmental policies. This conference and other subsequent international agreements called for an understanding of the environment as a "dynamic zone" where topography, ecology, land-use, population, and economy exist in a state of constant flux.[73] These conferences and international agreements also recommended implementing "Integrated Coastal Zone Management" (ICZM) techniques which meant increasing public-private partnerships, re-scaling the state's role, and giving over authority and regulatory powers to quasi state entities such as NGOs, international organizations, and hybrid regulatory groups. Thus ICZM,

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70   Mansfield, Becky. 2004. "Neoliberalism in the Oceans:'rationalization,' Property Rights, and the Commons Question." *Geoforum* 35 (3): 313–26.
71   Randeria, Shalini. 2003. Glocalization of Law: Environmental Justice, World Bank, NGOs and the Cunning State in India. *Current Sociology* 51(3-4): 305–328.
72   Münster, Daniel, and Ursula Münster. 2012. "Consuming the Forest in an Environment of Crisis: Nature Tourism, Forest Conservation and Neoliberal Agriculture in South India." *Development and Change* 43 (1): 205–27.
73   Clark, John R., S. M. Garcia, and J. F. Caddy. 1992. Integrated Management of Coastal Zones. FAO Rome. http://campusdomar.es/observatorio/_documentos/ordenacion_del_litoral/doctrina/integrated_management _of_coastal_zones.pdf, accessed March 18, 2014.

which is the backbone of the 2011 CRZ policy, completely shifted the governance of the coast under the rubric of ecological management. As Arthi Sridhar notes in her report on post-tsunami rehabilitation efforts, "the jurisdiction of the CRZ Notification is not just defined by its physical boundaries but also by the nature of the activities that it regulates or restricts in the zone."[74]

Despite the fact that the ICZM conceptualized the coast as mixture of several dynamic elements, the manner in which coastal ecological policies were framed makes it abundantly clear that not all elements of this dynamic mix are regarded as equal. Indeed, the focus of ICZM policies has been to emphasize the use value of certain marine or coastal "resources" and to hinge these policies on the effective management of these resources.[75] This emphasis is also evident in the mapping strategies of the CRZ policy. In the 2011 CRZ policy, the CZMPs were expanded to include revenue sources such as small and large-scale fisheries, boat landing sites and jetties, and other fisheries infrastructures such as refrigeration units. In making the CZMPs, the coastal states were also directed to record and identify areas with resource potential, such as eco-tourism zones. It was in the process of making these plans that this new ecological regime was instituted. As a result of the way in which the CRZ maps were drawn, and the elements that they prioritized, a new ecological order came into being through these maps. This visual re-ordering made certain elements, features, species and resources gain value as a result of their being mapped.

Apart from identifying ecological commodities, particular flora and topographic formations also began to be recognized as "valuable" for their role in mitigating natural

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74   Sridhar, Aarthi. 2005. Statement on the CRZ Notification and Post-Tsunami Rehabilitation in Tamil Nadu. ATREE. Pg. 5.

75   Haptezion, S. 2014. Promoting marine and coastal ecosystem functions through direct economic incentives. In *Economic Incentives for Marine and Coastal Conservation: Prospects, Challenges and Policy Implications.* Ed. Essam Yassin Mohammed. Routledge.

disasters. After the 1991 notification, the MoEF commissioned several research committees to investigate different parts of the CRZ notification based on which it published amendments. In late 2004, as the Swaminathan Committee was working on its report, a tsunami triggered by an earthquake in the Indian Ocean claimed over 12,000 lives in India. As the eastern coast was reeling from this event, in the following year, Maharashtra state was hit by severe floods during the monsoons. Both these events, plus a super cyclone that had struck the east coast in 1999, left deep marks on the CRZ notification and were critical in shaping its present form and its mapping process.

In the introductory paragraphs of its first review report of the CRZ, the Swaminathan Committee characterized the coast as an ecologically rich site under threat from both anthropogenic pressure and from natural disasters:

"The coastal areas are also the place where natural disasters are experienced. The entire East coast of India, the Gujarat coast along the West coast and the islands of Lakshadeep and Andaman and Nicobar face frequent cyclonic conditions which some times cause large scale destruction of life and property. The Super Cyclone had caused massive destruction along the coast of Orissa in 1999 and its impact was felt several kilometers inland. The tsunami, which occurred on 26th December, 2004 was one of the most serious and unexpected natural catastrophes to occur along the Indian coast... It would take several years to restore the damages caused by this natural catastrophe. While it is agreed that no human interference is possible to control such an event, precautionary measures such as coastal area planning for locating coastal communities in safer areas, protecting and propagating the natural protecting systems such as mangroves, coral reefs, shelter belt plantations, along with installation of early warning systems, timely evacuation and relief measures can minimize loss of life and property to a large extent."[76]

In the aftermath of these events, a number of articles written by academics and journalists suggested that the outcome of these events might have been different had the government taken greater care in enforcing the CRZ notification and in conserving ecological elements like sand dunes and mangrove forests. Particularly after the 2005 flood in Mumbai, there was widespread speculation about whether the severity of the flood could have been controlled

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76   Report of the Committee Chaired by Prof. M. S. Swaminathan to Review the Coastal Regulation Zone Notification 1991. 2005. Ministry of Environment and Forests. Pg. 3.

had the city's "natural drainage" channels such as rivers, mangroves, and salt pans been mapped, demarcated and protected under policies like the CRZ.[77]

After the 2004 Indian Ocean tsunami, a number of studies used remote sensing technology and field maps to compare the impact of the tsunami wave in different regions that had varying land features and vegetation.[78] For instance, a study carried out by Mascarenhas and Jayakumar along the coast of Tamil Nadu in South India, examined the effect of the tidal wave on different flora and land formations along the southern coast through surveys carried out at different points. Based on this study, they recommended planting particular kinds of vegetation and trees and emphasized the need to implement the CRZ notification. These studies advocated the use of high resolution mapping as a means to survey, study, and identify ecologically important species and formations.

These claims about the capacity of vegetation and dunes to act as "bio-shields"[79] quickly made their way from scholarly circles into newspaper articles via publicly accessible reports and studies. For instance, soon after the Mumbai flood in 2004, the Bombay High Court passed a judgment in a case filed by an NGO called the Bombay Environment Action Group, which alleged that the Maharashtra government was authorizing construction projects in areas covered by mangroves, in direct violation of the 1991 CRZ. The judges

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[77]   Sharma, Kalpana. *Battered... Mumbai Survives.* The Hindu. Sunday, Aug 07, 2005.
http://www.hindu.com/mag/2005/08/07/stories/2005080700030100.htm.
[78]   Bhalla, R. S.2007. Do Bio-Shields Affect Tsunami Inundation? Current Science (00113891) 93(6):831–833.
Also see: Chatterjee, Barnali. 2006. Satellite Based Monitoring Of the Changes in Mangroves in South Eastern Coast and South Andaman Islands of India-A Tsunami Related Study. International Institute for Geo-Information Science and Earth Observation Enschede, The Netherlands.
https://www.iirs.gov.in/iirs/sites/default/files/StudentThesis/barnali_thesis2005.pdf, accessed March 5, 2014.
And: Olwig, M. F., M. K. Sørensen, M. S. Rasmussen, et al. 2007. Using Remote Sensing to Assess the Protective Role of Coastal Woody Vegetation against Tsunami Waves. *International Journal of Remote Sensing* 28(13-14): 3153–3169.
[79]   Balaji, S. 2005. Bio Shield for Coastal Protection: Mangroves, Shelterbelts and Coral Reefs. *In* National Workshop on Tsunami Effects and Mitigation Measures, Department of Ocean Engineering Pp. 153–159.

noted that the petitioners cited various studies conducted post the Indian Ocean tsunami to

make a case for protecting mangroves in the city:

 "The main concern of the petitioners is the destruction of mangroves in various ways. The petitioners have relied upon a number of articles contributed by well known authors to depict that after the Tsunami, the scientific verdict has been unanimous damage is greatest where beaches have been built on, dunes flattened, where ground water was pumped out and coral reefs killed. There seems to be unanimity amongst all counsel appearing for different parties that mangroves play an important role in eco-systems and mangroves have to be preserved at any cost."[80]

This argument then appeared in a number of newspaper articles covering the case:

"During the floods in Mumbai on July 26, areas with mangrove land could absorb all the rainwater and areas where the mangrove zone had been reclaimed suffered severe flooding. In fact, the minimal flooding in Vikhroli, a northern suburb, and its surrounding areas was attributed to the 20-year-old Godrej Mangrove Project - about 1,750 acres (700 hectares) of mangrove that has been allowed to regenerate and now forms a magnificent cloak on that section of the coastline."[81]

In its judgment, the court ordered a complete halt on all construction and dumping activities

in areas covered by mangroves, irrespective of the nature of ownership on that land.

Secondly, it asked the state to submit satellite images of mangrove forests from 1991

onwards in order to identify violators and losses. It ordered the state government to prepare

and submit a study of all the existing mangrove forests in Maharashtra using remote sensing

technology and produce high resolution maps that included data from previous village and

revenue surveys. After this, all identified areas would be designated as "Protected Forests"

and monitored by the Forest Department of Maharashtra. Based on this judgment,

construction activity in mangrove forests was curbed and signs were put up at various points

in the city prohibiting the public from entering these "green zones."

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80 Bombay High Court: The Bombay Environmental Action Group vs The State Of Maharashtra And Ors. on 6 October, 2005.
81   Bavadam, Layla. 2005. *A Breather for Mangroves.* The Hindu.
http://www.hindu.com/thehindu/thscrip/print.pl?file=20051104001904400.htm&date=fl2222/&prd=fline&
Last accessed: 15 March 2015.

As the Mumbai mangroves case shows, the capacity of the map to "bear scientific objectivity" works in two ways. In the first, as we see in the examples regarding the CRZ violations, maps become the means to track these violations over a period of time. Secondly, maps also bear the marker of scientific objectivity in their capacity to identify specific botanical and topographic specimens that are then declared valuable as a result of their being mapped. As Sumathi Ramaswamy suggests, the association of cartographic knowledge with scientific objectivity allows entities that are mapped to take on the objective force of maps however fantastic or ordinary that they may be.[82] For instance, *Avicennia marina,* the most common mangrove species found in the city of Mumbai existed in relative obscurity before the 2006 court judgment that put species like it in the middle of the controversies surrounding land development n the city. It was this map-making enterprise that brought a new ecological order to bear upon the coast and its inhabitants, both human and non-human.

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Lines on an Interface and Objects in the World

In the aftermath of the 2006 judgement, the Maharashtra Forest Department conducted a detailed study of all mangrove forests in the city. Like the cadastral records, this survey will also be added onto the CRZ map. During one of my last days with the team conducting the CRZ survey, we came upon a large sign posted outside a green area lush with mangroves. The sign had been put up by the Maharashtra Forest Department and it urged the citizens to save the mangroves and help stop their destruction. The mangroves, it said, were a blessing

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82   Ramaswamy, S. 2004. The Lost Land of Lemuria: Fabulous Geographies, Catastrophic Histories. University of California Press.

conferred upon the city and protecting mangroves would help save lives in the event of a tsunami (Fig. 27). At specific points along the edge of this forest, the government had constructed concrete pillars. The pillars were physical markers of the forest's edge, and their locations were geo-referenced on the department's cartographic database. The pillars and the signs were the physical manifestations of the virtual lines that made up the edge of the online forest, and can be thought of as an example of continuities between the "physical" and the "virtual."

Figure 14: Sign urging citizens to protect mangroves.

As other examples in this chapter show, the lines that appear on the new CRZ maps appear as a result of bringing together different kinds of mapping data from different times. It is when this range of information is put together within the space of virtual interface that the relevant lines, like those that mark the tide, the various zones, and the individual

properties, can appear. A line on a computer terminal or a print out is simultaneously connected to a number of material objects, technologies, people, and governmental apparatuses, and emerges from within this overlap. Simultaneously, in a manner that Latour describes in *Pandora's Hope*, such "virtual" lines may also have the capacity to bring material things to life, and to find hooks in the ecological landscape.[83] Thus, the bureaucratic entity that is the CRZ, extends across many different kinds of objects, and actors, both virtual and physical, lend their own qualities and characteristics to it. At the core of the CRZ is the map that provides an organizing principle connecting all the elements that make up the CRZ, imbuing it with its inherently visual character.

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[83]   Latour, Bruno. 1999. Pandora's Hope: Essays on the Reality of Science Studies. Harvard University Press.

Impending Surveys

In mid-2012, a large public meeting was called in a "*koliwada*" (fishing settlement or fishing village)[1] in Mumbai, which was attended by many prominent members of the "Koli" (fisher)[2] community in the city, spread across different settlements. The meeting was conducted in an open courtyard of one particular *koliwada* that had witnessed a spate of demolition drives during which several protestors from the settlement had been arrested. A well known community leader took the stage and issued an ominous warning about the "tsunami" of real estate development that would sweep up the "native" fisher community, displacing them from their homes and ultimately depositing them in slum rehabilitation schemes – mass housing blocks where slum dwellers are rehoused when displaced by development projects. He suggested that the Koli community had brought this threat upon themselves by opening their settlements to "outsiders" (migrant workers) and that the time had come to remind the state of their identity as "natives" and as the "original inhabitants" of the city in order to forge their claims upon land and housing.[3] He urged the residents of fishing villages to

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1   "Koliwada" is a portmanteau combining the words "Koli" and "*wada*." In her study of women fishworkers of Mumbai, Shuddhawati Peke describes "Koli" as a general term referring to "fisherfolk, but this group comprises other sub-castes engaged in agriculture, labor, salt-pan work and other activities and are typically named after their occupation. The word '*koli*' means 'spider', and it is believed that the name originated from the similarity in action between a spider catching its prey and the fishers using nets to catch fish. Another interpretation is that '*kol*' means 'boat', hence the one who drives the boat is a '*koli*.'" (Peke, 2013). The term "*wada*" can mean either a single or a group of houses. Thus the word "Koliwada" describes a residential cluster where fishing communities of Maharashtra live.
2   I use the gender-neutral term "fisher" to refer to both members of the *Koli* caste and those working in the fishing industry.
3   In historic studies such as Sharada Dwivedi and Rahul Mehrotra' account of Mumbai's development (1995), and in popular assumption Kolis are termed as the original inhabitants of the archipelago that became Mumbai. See: Dwivedi, Sharada, and Rahul Mehrotra. 1995. *Bombay: The Cities Within*. India Book House.

refrain from "joining hands" with private developers, and instead, work and build their homes in a manner that would reflect their identity as fishers.

Such a provocative speech is not anomalous; rather, it is characteristic of speeches delivered in the last few years at various public meetings in different *koliwadas* across the city. Not only does it evince the political inclination of the Koli community's housing struggle, echoing some of the anti-migrant and nativist discourses of regional right wing parties such as the Shiva Sena,[4] it also lays bare the importance of identity in gaining access to housing in the context of the spatial politics in Mumbai. Lastly, the speaker's urgings to work upon the physical fabric of fishers' homes speaks to the ways in which these identities are claimed not only through legal documents, but also through visual and material practices. Ultimately, the struggle for land, housing, space, and amenities manufactures collective identities such as "native fishers" and pits them against those who might be classified as "migrants" or "outsiders." It also pits spatial identities and categories such as *koliwadas* or "fishing villages" against other urban settlements; categories that are hard to pin down and fix in the context of a city like Mumbai.

In this chapter, I look at the importance of identity in claiming rights to housing in Mumbai, and the creative ways in which these identities are evoked in the absence of documentary evidence. I seek to show how identification and classification work within the framework of neoliberal planning policies and the anxieties they produce as the policies unfold in an urban terrain. In the process, I look at the event of the survey: when a cartographer arrives at a settlement, and the act of categorizing a place or giving it a label/ identity on a survey drawing. Through ethnographic work with government surveyors engaged in the task of solving property disputes, I show how the encounter between the

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4   Hansen, Thomas Blom. 2001. Wages of Violence: Naming and Identity in Postcolonial Bombay. Princeton University Press.

surveyor and the landscape is not one that is closed off to the fisher community, but one that presents openings for controlling the ways in which the settlements gets drawn into the survey.

In the last three decades, the city of Mumbai has been the site of drastic land transformations shaped by the forces of neoliberal planning policies. Historically, the focus of these policies has been on those living in informal settlements such as slums and the construction of "slum rehabilitation schemes" – large mass housing blocks into which residents from slum settlements are moved. While this process offers the chance of having a "permanent" home, it has resulted in widespread displacement and dispossession in the city and has drawn sharp criticism from urban activists and scholars for the inequalities and squalor that is reproduced in these schemes.[5] Each of these neoliberal initiatives is enforced through a system of survey mechanisms based on which the state identifies those eligible for housing under its various policies and schemes. These housing policies offer the promise and security of an apartment home, a much sought after and often unattainable commodity in Mumbai's inflated real estate market. However, in the context of the 2011 CRZ, it is often at the expense of creating new boundaries and tensions within different low income communities who, while living in the same settlement, are not eligible for the same housing rights as a result of the classificatory mechanisms adopted by these policies.[6] In a context where informality is increasingly criminalized,[7] these policies set in motion a series of

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5   Bhide, A., P. K. Shahajahan, and S. Shinde. 2003. *Utilization Of Slum Rehabilitation Scheme: A Study Conducted for Slum Rehabilitation Authority, Mumbai*. TISS Project Report. Mumbai: Tata Institute of Social Sciences.

6   For instance, in her study on slum resettlement practices in New Delhi, Ursula Rao (2010) argues that slum "resettlement proves to be a complicated hybrid that uses the informal to produce the formal and thus reproduces insecurity in an environment that increasingly criminalizes informality."

7   Rao, Ursula. 2010. "Making the Global City: Urban Citizenship at the Margins of Delhi." *Ethnos* 75 (4): 402–24. Also see Björkman's account of how informat settlements are given an "official" status through rehabilitiation policies: Björkman, Lisa. 2014. "Becoming a Slum: From Municipal Colony to Illegal Settlement in Liberalization-Era Mumbai." *International Journal of Urban and Regional Research* 38 (1): 36–59.

transformations to formalize housing in the city through these survey and identification mechanisms.

As the 2011 CRZ regulates all development along the country's coast, one of its main concerns is the regulation of housing policy and zoning residential areas.[8] This policy introduced new housing and developmental reforms for those living in unplanned settlements along Mumbai's coast, such as the fisher community, sending fresh waves of anxiety through an already precarious terrain. Based on the understanding that the fisher community shared an intimate relation with the coastal environment, the 2011 CRZ granted them the right to develop these settlements provided they could prove that they were legally "recognized" as fishing settlements.[9] At the same time, it directed that residents of "slum" settlements located along the coast of Mumbai be rehoused in accordance with the Maharashtra state's slum rehabilitation policy. This created a paradoxical situation on the ground as fisher communities in the city of Mumbai live in dense unplanned hybrid settlements along with many other communities, including migrant workers, making it hard to pinpoint the identity of these settlements.[10] For instance, many areas designated as "slums" may contain fishing settlements within it. Consequently, these classificatory categories drew fresh boundaries between communities living in unplanned settlements that are rife with internal divisions. These anxieties were amplified because of the absence of survey records or documents that would allow communities to make any concrete claims. While the CRZ policy attempted to provide security and safety to coastal communities living in unplanned settlements by giving them access to permanent housing, its inability to address

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8   Coastal Regulatory Zone Notification. 2011. Ministry of Environment and Forests.
9   By this, it meant that the communities would have to show that they were recorded on documents such as Development Plans, Revenue Records, or City Surveys as *"Koliwadas."*
10   As I show later, the problem of furnishing proof also has to do with the manner in which settlements are recorded on documents like revenue surveys and development plans.

and fold in the social and spatial hybridity in these settlements ended up heightening the "specter" of housing insecurity and deepening existing divides.[11] Consequently, faced with the need to "prove" their identity as "native" Koli fishers in order to claim developmental rights under the CRZ policy, much of the fisher communities' efforts were directed towards the construction of visual and material proofs. This work of establishing their identity and that of their settlements as distinctly Koli also involved distancing themselves from other communities and establishing new boundaries.

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Classificatory categories and neoliberal housing reforms

The Ministry of Environment and Forests (MoEF) introduced the first CRZ notification in 1991 under the 1986 Environment (Protection) Act, and it placed strict building restrictions on coastal land in the city.[12] The new version of this policy, which was released in 2011, lifted those restrictions, opening up coastal land to development.[13] In many ways the CRZ, operates in a fashion similar to other neoliberal environmental policies around the world, such that it focuses on the regulation of environmental resources and "goods" as a conservation strategy.[14] However, as Castree suggests, "One would hardly expect 'neoliberalism' to operate uniformly across the globe and so the fact of heterogeneity, path

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11   Appadurai, Arjun. 2000. "Spectral Housing and Urban Cleansing: Notes on Millennial Mumbai." *Public Culture* 12 (3): 627–51.
12   Coastal Regulatory Zone. 1991. Ministry of Environment and Forests.
13   I use the year to distinguish between the two different CRZ notifications and refer to them as the 1991 CRZ and the 2011 CRZ, which is how they are referred to in government reports.
14   Bakker, Karen. 2007. "The 'Commons' Versus the 'Commodity': Alter-Globalization, Anti-Privatization and the Human Right to Water in the Global South." *Antipode* 39 (3): 430–55.

dependency, and divergence should be neither a surprise nor a profound analytical issue.[15] Castree and others suggest looking at the diverse, and locally rooted practices of neoliberalization, and in following this directive, I suggest that one of the most important and concrete aspects of the CRZ policy is its impact on housing regulation and the allocation of housing rights based on notions of community identity. As I show in later chapters, housing not only becomes a major point of contention in the CRZ, but also becomes the way in which the CRZ gets enmeshed in local politics and struggles over infrastructure and space.

Alongside ecological conservation and sustainable development, the 2011 CRZ lists the protection of the lives and livelihoods of "traditional fisher communities" as one of its main goals.[16] In this, the CRZ is not unlike other neoliberal planning and environmental policies that are based on the notion that certain local or indigenous communities share a special relationship with the environment which gives them an intimate understanding of its workings and thus a greater right over it than other communities. In her work on the changing role of the state in neoliberal economic globalization and the struggle for environmental justice, Shalini Randeria argues that the distribution of rights on such an "ecological" premise is highly problematic since it not only romanticizes indigenous communities, it also "makes people's access to commons contingent on their conservation

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15   Castree, Noel. 2008. "Neoliberalising Nature: The Logics of Deregulation and Reregulation." *Environment and Planning. A* 40 (1): 131.

16   Before the 2011 CRZ notification was released, the MoEF issued a directive calling for nationwide consultations with fisher communities following mass protests. These protests were organized after the MoEF had released a draft notification in 2008, which was met with a lot of opposition from fisher communities who felt that they had been written out of the CRZ. The outcome of these protests was the draft of an act to protect the rights and occupation of traditional fishers, which is called the "Traditional Coastal and Marine Fisherfolk (Protection of Rights) Act 2009" and has only been published as a draft for public consultation, and is yet to be passed as a law. For a summary of this consultation process see CEE Report (2010).

skills and intentions rather than framing the question in terms of their rights to land, forests and water for their livelihood."[17]

In the case of the CRZ, the fishermen are cast as a "traditional" community who share a close relation with coastal lands, and housing rights are allocated based on these identities that are constructed within the policy framework. This allocation of rights based on identities is not only ambiguous, it also overlooks other communities with whom the fishers are intricately connected through the social fabric of the settlement they inhabit, especially in urban areas like Mumbai. Moreover, this protection and right over land is only given to those who can prove their identity as "traditional" fishers and can prove the identity of their settlements through documents like revenue surveys. In the context of an urban center like Mumbai, the housing reforms introduced by the CRZ and its reliance on rigid classificatory categories raises particular problems which need to be understood in relation to the city's slum rehabilitation policy which has long been associated with violent demolitions and mass displacement of communities. A brief overview of the classificatory categories shows how the CRZ policy casts both slum dwellers and fishers as vulnerable subjects, and at the same time, characterizes their vulnerability in completely different ways. These distinct understandings of vulnerability directly influence the way development potential and rights are distributed between these two communities, and espouse a tension internal to the policy framework.

In the 1991 CRZ, coastal land in urban areas like Mumbai was classified as "CRZ-II," which was defined as substantially developed urban areas (or areas falling under municipal limits) with roads and other amenities.[18] All further development within this zone

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17   Randeria, Shalini. 2003. "Glocalization of Law: Environmental Justice, World Bank, NGOs and the Cunning State in India." *Current Sociology* 51 (3-4): 305–28.
18   MoEF 1991. Ibid.

was strictly controlled. The central government issued a directive to all the coastal states to prepare Coastal Zone Management Plans (CZMP) in accordance with the 1991 CRZ policy.[19] It took the Maharashtra government seven years to submit its CZMP and the MoEF finally approved it in early 2000. In his account of low income housing policies in Mumbai, Sundar Burra writes that in the years that the Maharashtra state and central governments were going back and forth with the CZMP, there were two major policy changes in relation to urban development and slum housing in the city. A month after the 1991 CRZ was passed, the Municipal Corporation of Greater Mumbai published a revised version of the Development Control Regulations, a document that lists the building and construction guidelines for Greater Mumbai. The new regulations expanded the Floor Space Index (FSI) allotted for slum rehabilitation schemes from 1.33 to 2.5, doubling their development potential.[20] Then, in 1995, the government of Maharashtra set up the Slum Rehabilitation Authority (SRA 1995) and this marked a drastic change in the way the state approached urban planning.[21]

Slum rehabilitation as it exists in its current form was introduced through the SRA in 1995 and refers to the process of moving slum dwellers from their informal settlements to mass housing blocks through private partnerships between residents' co-operatives and private developers. Influenced by economic liberalization, the SRA marked the shift from centralized state-led planning to decentralized planning strategies. The result was that for the

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19   Though the states were directed to prepare these management plans right after the 1991 notification was released, this process was not started until the Supreme Court passed a mandamus in 1996 (1996 AIR 1446, 1996 SCC (3) 212).

20   Floor Space Index, also known as Floor Area Ratio, is the ratio between a building's total floor area to the area of the plot it occupies. Restricting FSI in a given area is a means of controlling the developmental potential of that place, its value in the real estate market, and a means of regulating the amount of civic infrastructure consumed by the residents of that area. An increase in FSI from 1.33 to 2.5 nearly doubles the amount of built space that can be constructed on the same plot, therefore yielding a higher profit for the developer.

21 Burra, Sundar. 2005. "Towards a pro-Poor Framework for Slum Upgrading in Mumbai, India." *Environment and Urbanization* 17 (1): 67–88.

first time, slum rehabilitation emerged as a profitable venture for private developers because of the incentives offered by the state.[22] Neoliberal policy initiatives like the SRA also gave rise to new public private partnerships, new relations and configurations between civil society and the state, and marked the emergence of several NGOs and shadow state agencies which played a key role in the massive urban transformation that began in the mid 1990s (Weinstein 2011). However, while a number of slum dwellers were moved into mass rehabilitation schemes as a result of the SRA, the MoEF denied Maharashtra government's repeated requests to construct SRA schemes for slums located along the coast (on prime real estate) and thus, within the CRZ. In a letter issued in September 1998, the MoEF denied the state's plea to allow increased FSI for slum rehabilitation schemes in the CRZ as the new development rules had been released after the CRZ notification had passed. Further, it stated that slums on the seaward side could not be moved into rehabilitation schemes.[23]

As most fishers' settlements, or *koliwadas*, in the city are located along the coastal edge, they were also subject to the development restrictions imposed by the 1991 CRZ, according to which development in the settlements could not exceed what was already allotted in the city's municipal bye-laws, and no further construction would be permitted in these areas.[24] Thus, the 1991 CRZ effectively froze development along Mumbai's coastline, closing off the possibility for any kind of redevelopment in unplanned settlements along the coast and cutting them off from the drastic urban transformation caused by the SRA in

22   Anand, Nikhil, and Anne Rademacher. 2011. "Housing in the Urban Age: Inequality and Aspiration in Mumbai." *Antipode* 43 (5): 1748–72.
        Mukhija, Vinit. 2001. "Enabling Slum Redevelopment in Mumbai: Policy Paradox in Practice." *Housing Studies* 16 (6): 791–806.
23   Khwaja, Joint Secretary MoEF, to Chief Secretary, Government of Maharashtra. 8 September, 1998. No.J-17011/3/95-LA-III. Government correspondence available as public information at http://envfor.nic.in/content/archive
24   However, there was no special mention or provision for the *Koliwadas* in the 1991 CRZ.

other parts of the city. The 2011 CRZ reversed this situation by opening up the coast for development.

The changes announced in the 2011 CRZ reflect two major shifts in urban planning that had transpired in the intervening decades: First, as described, was the shift in planning and low income housing from state led initiatives to neoliberal reforms like SRA, combined with the pressures of a booming real estate market. Several scholars have written about the manner in which the SRA policy was promoted by the city's developer lobby as a means of capitalizing on the growing real estate market at the expense of the lives and livelihoods of the poor in the city.[25] Secondly, a number of natural disasters hit the subcontinent in the two decades between the two notifications, such as the 1996 cyclone, the 2004 Indian Ocean tsunami, and the 2005 Maharashtra floods. At the time that the Indian Ocean tsunami hit the Indian subcontinent, a team of researchers called the Swaminathan Committee had already been appointed by the MoEF to review the 1991 CRZ notification and provide recommendations for its revision. The committee's report was deeply influenced by the impact of these disastrous events and their recommendations, in turn, critically shaped the 2011 CRZ and its development regulations for both fisher settlements and slums in Mumbai.[26]

In its report, the Swaminathan committee stated that since CRZ did not offer builders any incentive to construct rehabilitation schemes as the notification capped the FSI in these areas, slum settlements along the coast were particularly vulnerable to natural disasters like tsunamis due to the material conditions of their housing which left them

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25   Avijit Mukul Kishore's documentary on the everyday struggles of those who inhabit SRA schemes is a poignant depiction of the loss and peril the residents of these schemes bear; not only are they displaced from the markets, communities and modes of production that sustained them, they are also housed in buildings without access to basic infrastructure such as water or garbage collection. Also see: Sanyal, Bishwapriya, and Vinit Mukhija. 2001. "Institutional Pluralism and Housing Delivery: A Case of Unforeseen Conflicts in Mumbai, India." *World Development* 29 (12): 2043–57.

26   Swaminathan Expert Committee Report on the CRZ Notification. 2005. MSSR Foundation. Chennai.

exposed to the elements. Before releasing the new notification, the MoEF also held a series of consultations with fisher communities across the nation, who demanded a greater representation within the policy, greater provisions for activities related to fishing and exclusive rights over settlements and commons. [27] Consequently, the committee recommended that the revised CRZ notification grant slum dwellers living along the coast the right to opt into SRA schemes so that they would have access to secure and permanent homes. The committee also put fishers' rights at the forefront of the revised notification based on the idea that the fishers depended upon the coast for their livelihood and survival. Consequently, the 2011 CRZ notification put protecting the rights of coastal communities as one its primary goals and granted fishers in Mumbai the right to develop their settlement in accordance with the Development Control Regulations of the city.

In this short historical narrative, both fishers and slum dwellers emerge as vulnerable subjects, who, according to the committee, require the protection of the CRZ policy. However, this vulnerability is framed in different ways. The fishers are cast as "vulnerable" subjects because of their intimate relation to the coast and any coastal degradation threatens their livelihood. On the other hand, slum dwellers are cast as "vulnerable" given the material conditions of their homes, which expose them to natural disasters. This differing notion of vulnerability within the committee report directly affected the way the CRZ policy addressed the housing needs of both these groups.

Based on these two notions of vulnerability, both fishers and slum dwellers are treated differently and so are their rights over land and housing despite the fact that they very often occupy the same settlement. As a result of these different notions of community identity, occupation, indigeneity, and vulnerability, different communities are afforded

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27   Report of the Public Consultation with Fisherfolks and Community to Strengthen Coastal Regulation Zone (CRZ) Notification, 1991. 2010. Center for Environment Education and MoEF. New Delhi.

different rights and "protections" as evidenced by the 2011 CRZ. The housing rights for slum dwellers and fishers of Mumbai appear in different parts of the CRZ notifications, and the language and the rights given to each of these groups reflects these two different understandings of vulnerability.

In the section that addresses coastal development in the Greater Mumbai region, the 2011 CRZ specifies that the slum dwellers living along the coast be rehoused in SRA schemes as a way of providing "safe and decent" dwellings. The *koliwadas,* however, appear within the section titled "Redevelopment of dilapidated, cessed, and unsafe buildings" where it states that all fishing settlements identified in "relevant" government records be mapped and registered under the CRZ-III category, which specifically deals with development in rural or under developed areas. Moreover, it allows development and repair in these "recognized" settlements in accordance with the building and construction guidelines published by the city's municipal authority. Thus, the housing regulations in the CRZ clearly reflect its assumptions about the lives and livelihoods of urban coastal communities. The slum dwellers are cast as illegal occupants of land, who must nevertheless be allowed some measure of protection given their vulnerability to natural forces. On the other hand, fishers are cast as having a right over coastal land as a result of their traditional occupations. Unlike slums, fishing settlements are put in a separate category; they are classified as CRZ III which refers to "relatively undisturbed and undeveloped lands," further cementing their identities as indigenous, unchanging, rural, and sharing a special relationship with the environment.[28]

These classificatory categories have concrete outcomes in terms of housing potential and development rights. For instance, those classified as slum dwellers face the prospect of being displaced from the site of the settlement and placed into mass housing blocks in small

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28   MoEF 2011.

one-room tenements that typically measure 225 sq. ft. Those who are recognized as fishers stand to have a much greater say with respect to housing and commercial development and as land owners, they also stand to gain from commercial development in the settlement. Consequently, policies like the 2011 CRZ end up drawing distinct boundaries around communities while laying the foundations for transforming informal housing in the city.

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Hybrid settlements, hybrid built forms, and material continuities

The question of defining "traditional fishers" is especially complex given the make up of the fishing industry in an urban center like Mumbai. In Mumbai, the fishing industry provides employment to people who are fishers "by caste" and also to migrant workers who belong to different castes and communities. The majority of those working in the fishing industry belong to the Koli community. According to Ranade and Peke, while the word Koli generally refers to a "fisherman," it is also used to describe a caste group comprising several sub-castes and tribes who might be engaged in other industries such as agriculture or saltpan work.[29]

Apart from Kolis, many migrant workers come from different villages in various parts of the country and work as deck hands for the fishers. Many others work as daily wage laborers who sort the catch or work in drying yards, and in transportation or storage. These workers often live on boats or in shanties located in the same settlement as fishers and yet,

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29   Sanjay Ranade (2008) writes that most of the fishers in Mumbai describe themselves as either *Son* or *Mahadev koli*. See: Ranade, Sanjay, and others. 2008. "The Kolis of Mumbai at Crossroads: Religion, Business and Urbanisation in Cosmopolitan Bombay Today." In *17th Biennial Conference of the Asian Studies Association of Australia, Melbourne*, 1–3. http://artsonline.monash.edu.au/mai/files/2012/07/sanjayranade.pdf.
          Peke, Shuddhawati. 2013. "Women Fish Vendors in Mumbai: A Study Report." http://aquaticcommons.org/11234/.

as they do not fit the category of "traditional fishers," they are not given any rights to land or housing under the CRZ law. Apart from these migrant workers, there are many other communities who also inhabit "fisher settlements." While not all may participate in the fishing industry, they are all embedded in the life of the settlement and connected through its economic, spatial, and social fabric.

In 2011, I began conducting fieldwork in Malwani Koliwada, a fishing village located in P-North ward of Mumbai, in the western suburb of Malad. Some time in September, I began accompanying Raghu Koli, a resident of Malwani Koliwada, on his trips to supervise construction of a new building in the fishing village. The building, which was located in a northern corner of the settlement, had been under construction for some time. The construction work depended on Raghu's finances, which as I understood, were subject to much fluctuation as his main occupation was to buy fish at a cheap rate at the docks and sell it at a slightly higher rate at large export markets located outside the city. Since there was no fishing in the monsoon season, he had to make do with his savings and the small amount of money he earned from another house that he was renting. As the fishing season picked up, he had managed to save a little money and wanted to get as much construction work done as possible. I met him at the construction site, which was just a concrete plinth with four exposed brick walls that were already showing signs of wear from the monsoon. The openings for three windows and a door gaped like cavities. Today, he had decided, he would get construction workers to lay the floor in the upper level of the building that would have two single room tenements that he would rent. The lower floor would be rented as a commercial space. Three construction workers, two men and a woman, were walking up and down the narrow lane carting bricks from the back of the small truck to the building which was parked at the end of the main road leading up to the settlement. From that point, a

narrow alleyway led to the small construction site sandwiched on all sides by buildings. As we sat on the plinth watching the laborers work, Raghu remarked that he would manage to get a higher rent for the house if he could install toilets with proper connections to the city's waste line. But since the settlement had no planned infrastructure, this was impossible. "Construction in the *koliwada*," he remarked, "happens like this." He spread his hands outward, his gesture encompassing all the unpredictability and informality of construction activities in the settlement.

Raghu's building was built in the same manner as others around it – through the use of quick and simple construction materials such as brick, cement plaster, cast iron sections and asbestos sheeting for the roofs. Nearly all construction work in the settlement is done without notifying or seeking permission from the municipal authorities. As Raghu explained, "In order to get permission you have to show that there is a proper access road. Look, we had to park the truck way over there (gesturing in the direction of the main road), and have the laborers carry in all the bricks and cement bags. When the municipality itself does not provide such facilities, how can we show that we have such facilities in order to construct houses? On top of that they want to see your papers (property cards). Either we have to have papers or we have to pay a bribe. No one does that (getting construction permits)... because it is not possible for us."

For the residents of unplanned settlements, informal construction practices and the built form these practices produce, are a consequence of their circumstances created partly by the fact that the state does little to provide basic infrastructure to residents of informal settlements. Settlements like *koliwadas* have been growing unregulated for decades. As families expanded over the course of generations, residents added one or two floors over their existing houses, using cheap and quick construction techniques. The result is a densely

populated settlement with little room to add infrastructure or to widen roads. During interviews, municipal engineers were quick to point out that it was no easy task to provide infrastructure in these dense settlements, as there was simply no room. As one municipal official said, "Back when these villages were not so big, there was no initiative to add infrastructure at that time. Over a period of time, those who live there have made additions to their houses. The result is a settlement where it is difficult to introduce roads, sewage pipes, and water mains. This is a big problem because if there is a fire or any other emergency, it is hard for vehicles to reach anywhere in the settlement." Both Raghu and the municipal engineer describe a paradoxical situation: on the one hand it is a difficult task to introduce infrastructure like roads and sewage lines into the settlement. On the other, it is precisely these kinds of infrastructure that are required for regulated construction work to occur in order to comply with existing building regulations and codes. These problems are compounded by the rising development and land pressure in suburbs like Malad, which has transformed from a distant peri-urban area to a highly populated suburb.

In a topographic survey sheet of North Salsette island published in 1925 under the direction of surveyor general C. P. Gunter, Malwani and its sister villages like Madh and Karodiwadi are small islands surrounded by a muddy swamp. A thin red line marks the road connecting them to Malad village and the main railway line. At the time that the survey was drawn, Malad and its surrounding areas were a rich source of trachyte, or "Malad stone" as it was popularly called. Trachyte dug up from quarries would be sent south to the island city to be used in construction works. Yet, apart from the small cluster of homes on the island and the settlement in Malad, there was little else in the area (Fig. 28).

A city survey sheet drawn a few decades later in the 1960s shows the village as a cluster of about 40 houses connected to the road leading to the station. These houses still

exist in the village and form the innermost part of the settlement, but have drastically changed in the last few decades, and signs of these changes are clearly visible from the outside. For instance, it is very easy to see where the older stone houses end and the later additions in brick construction begin. In some homes, new columns were erected on the old plinth to add floors that cantilever from the top and project out into the narrow streets. This kind of improvisational construction extends to services as well; pipes snake out of kitchens and connect to water mains, waste pipes lead out from wealthier homes with private toilets and lead to septic chambers below (Fig. 29, 30, and 31). All forms of waste run off into common drainage channels that empty into the small patches of farm land and the green "no development zone" that rings the village; ultimately ending up in the creek. These improvisational construction processes have lead to a "hybrid" built form – a mix of different kinds of materials, construction methods, and fixtures and services added over time.

Figure 15: Detail from topographic survey conducted in 1925 showing the villages of "Malauni" and "Karodivadi" and "Malad." The dashed black line indicates the Western Railway Line. Source: Maharashtra State Archives.

Figure 16: The housing cluster pictured here was built as the family expanded over three generations. Services like drain pipes and water supply lines were added at different points.

Figure 17: Most buildings in the settlement are built out of a mixture of building materials and construction techniques. In the house pictured here, one can distinguish the recent additions because of the different construction materials.

Figure 18: Services like water tanks, electric lines, and wastewater drains are added to existing structures as they expand.

In addition to this formal or material "hybridity," all *Koliwadas* in Mumbai are home to many communities who inhabited it at different points in time. While maps and surveys indicate that up until the 1980s Malwani and its surrounding areas were still quite distant from the intense building activity that was happening to the south, Malad and other suburbs in the north were proposed as sites for industrial and manufacturing zones. In the "Development Plan" drawn by the Municipal Corporation in 1981, that one can see that there were a number of "proposed" uses for the land in this area. A big part to the north of Malwani was developed as an industrial zone, and a large residential zone developed along the road connecting it with Malad station. While these developments were proposed in 1981, it was only in the early 2000s when industrial estates had largely moved out of the metropolis that Malad experienced rapid development. As Mumbai's real estate market skyrocketed in the late 1990s and early 2000s, developers and prospective homeowners began looking to the northern and western suburbs like Malad where the land prices were cheaper. At this time, a large commercial and technical complex named "Mindspace" was constructed on a tract of land adjacent to the creek, which had served as a landfill. The construction of such commercial and office complexes in the northern suburbs led to Malad becoming the fastest growing suburb in the city.[30]

For the residents of villages like Malwani and Kharodi, this rapid growth meant a steep rise in land prices. Several villagers who owned small parcels of agricultural land took this as an opportunity to construct housing, which they then put up for rent. Some of the landowners were fortunate enough to own land along the main road built apartment blocks, which were sold on the open market, as it was possible to connect these apartments to the

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30   Jain, Bhavika. Oct 13, 2013, "Slums and Call Centres Make Malad Most Populous Place." *The Times of India.* Accessed September 1. http://timesofindia.indiatimes.com/city/mumbai/Slums-and-call-centres-make-Malad-most-populous-place/articleshow/24064028.cms.

city's water and sewage lines. Most others who owned land away from the main road could only afford to construct single room apartment blocks, which were rented at a much cheaper rate. Lack of low-income housing meant that for the thousands of migrants looking for employment in the burgeoning suburb, these one-room tenements presented a viable housing option. By the time I began my fieldwork in 2011, Malwani Koliwada was home to many different communities of people with varying incomes.

In Malwani Koliwada, the Koli community is predominantly located in the inner part of the settlement. However, it is surrounded by other communities like the Pathare Prabhus[31] who also count among the older residents of this settlement. Other communities like migrant workers occupy the newer housing built on the edges of the settlement, almost all of which is private land and housing owned by the more well to do Kolis. While these different communities seem to occupy different pockets within the settlement, these are highly permeable boundaries perforated by different lines of marriage, kin, and economic ties. Of course, this description of Malwani Koliwada should in no way be taken to represent or stand in for the physical conditions or the different communities and their relations in other settlements across the city. Each of these fisher settlements is located in different parts of the city and faces different kinds of land pressures based on local urban conditions and real estate forces. For instance, Benita Menezes's study, located in an urban village in another part of the city, shows the complex and tense relationship between the Koli and migrant community, where both communities are faced with the ever-present danger of losing their homes as a result of the periodic demolition drives conducted by the state.[32] In comparison,

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31   In *"Mumbaiche Varnan,"* Govind Narayan describes Pathare Prabhus as one of the older communities to settle on the island (Ranganathan and Prakash 2007).

32   Menezes, Benita Maria. 2013. "Engaging the State: Urban Citizenship Practices at the Frontier of Urban Renewal and Nagar Raj in Suburban Mumbai." Dissertation prepared for Master of Arts in Planning, University of British Columbia.

the residents of Malwani Koliwada seem to fare better as many residents have property cards and titles confirming their ownership on the land. However, what is important to note is that all of these settlements are a heterogeneous mix of different communities connected to each other and the rest of the city through a web of economic and social relations.

In using the term "hybrid"[33] to describe the physical and social makeup of a settlement, I am following several other scholars whose works emphasize the need to gain a nuanced understanding of the social and economic fabric of these settlements. I take the term "hybrid" from Jan Nijman's study of slums where he suggests "slums in urban India have always exhibited a hybrid social structure both urban and rural, allowing the slum dwellers to be part of the city, in terms of work, while continuing social and cultural affiliations with the village."[34] While he uses the term hybrid as a means of explaining ways in which kin relations are structured, I expand its use to describe social and material conditions and individual. Using the language of "hybridity" also allows us to enter into the concerns surrounding informal housing as an aspect of "urban ecology." As Anne Rademacher writes in her work on settlements in Kathmandu, informal housing is not only framed as an environmental problem, but the ways in which ecological policies attempt to solve this "problem" is through a systematic formalization process. Central to such a formalization process is a categorization apparatus, which is wielded through the survey.

In relation to the CRZ, a *koliwada* refers to a settlement that is predominantly occupied by Kolis whose primary occupation is fishing. "Koli" is an umbrella caste term used to describe several tribes of cultivators and fisher communities living in the states of Maharashtra and Gujarat. Kolis were also described as a criminal caste, though this may have

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33   The term "hybrid" comes out of the literature on urban design and planning in South Asia, and as such should be read in that context.
34   Nijman, Jan. 2008. "Against the Odds: Slum Rehabilitation in Neoliberal Mumbai." *Cities* 25 (2): 73–85. doi:10.1016/j.cities.2008.01.003.

applied to specific sub-castes.[35] On the other hand, slums are generally defined in relation to their "informal" or "illegal" status, and in terms of the lack of infrastructure and the quality of the construction material. As numerous studies of different settlements across Mumbai show, they rarely ever fit within these classificatory categories. The term "hybrid settlement" also conveys the slippage between the categories of *"koliwada"* and "slum" as framed by the state. The author Kalpana Sharma suggests that categories such as "slum" are constructed by those "who do not live in this connected and disconnected world of contiguous settlements."[36] Dharavi, which is the site of her book, was originally a small fishing village on the banks of the Mithi River, which cuts across Mumbai. Sharma argues that though Dharavi is now described as "Asia's largest slum," places like it are "stamped by the character of different communities and trades" who live within it. As Rahul Srivastava and Matias Echanove's work in Dharavi shows, the collection of settlements that once comprised the contemporary city of Mumbai have grown and transformed with the rest of the city.[37] Like Sharma, they argue that a rigid understanding of formal versus informal development fail to take into account the lived realities of most residents of Mumbai and innovative manner in which these settlements have grown.

These studies show how settlements like Malwani Koliwada and Dharavi are hybrid or heterogeneous in multiple ways. Not only does the practice of incremental construction give rise to a hybrid built form, as Solomon Benjamin notes, the residents of these settlements also inhabit fluid and heterogeneous identities, working simultaneously in

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35   There is some dispute regarding this. The Bombay Gazetteer quotes one administrative officer as describing specific sub castes as "criminals" but this is not recorded with any consistency. What is common across all records is that the term Koli describes a number of caste groups (some of the sub-castes are listed on the Indian government's Scheduled Castes and Tribes List).

36   Sharma, Kalpana. 2000. *Rediscovering Dharavi*. Penguin. India.

37   Echanove, Matias, and Rahul Srivastava. 2014. "Neighbourhoods in-Formation: Engaging with Local Construction Practices in Mumbai." In *The Economy of Sustainable Construction*. Edited by Andreas Ruby and Nathalie Janson. Berlin: Ruby Press, 2014.

different enterprises and taking on multiple roles. Thus, many of these scholars emphasize the need to reject these classificatory categories in favor of planning interventions that take these hybrid identities and fluidities into account. For example, in his study on slum redevelopment, Vinit Mukhija argues for a need to bring back programs that favor in-situ interventions (such as providing toilets, water supply, and monetary aid for repairing and reconstructing houses with better materials) that also result in the formal recognition of these settlements by the state.[38] However, as Benjamin writes, it is when residents of unplanned settlements demand infrastructure from the state, that the threatening possibility of being labeled as illegal or unauthorized is most acutely felt. Similarly, it is at the time when new policies or housing reforms are introduced that the possibility of being labeled as legal or illegal emerges on the horizon. In such a scenario, political action is often geared towards finding pathways to recognition and securing housing and other civic amenities. This is especially the case as each new policy initiative is accompanied by elaborate survey, enumeration, and coding mechanisms based on which services, amenities, and rights are distributed. Consequently, it is important to look at the ways in which communities mobilize themselves in order to be recognized under policies like the 2011CRZ, which accords different rights to those labeled as "slum dwellers" as opposed to those recognized as "traditional fishers."

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Finding and Naming a New Category

The fishing villages of Mumbai Suburban District appear in two kinds of government survey documents: The "revenue surveys" which were conducted in the 19th century by the British

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38   Mukhija. 2001.

government and in the "City Survey Sheets" (or CTS), which were drawn by the surveyors appointed by the Municipal Corporation of Greater Mumbai. These surveys were published between 1963 and 1967 after parts of the island of Salsette were added to the municipal corporation's (MCGM) jurisdiction and consolidated to form what is now called the Mumbai Suburban District.[39] Neither of these surveys record "fishing villages" or *"koliwadas"* as a distinct category. Instead, these settlements appear on these surveys under the category *"gaothan,"* which is used to refer to portions of land in each "revenue village"[40] used for residential purposes (i.e., the boundaries of clusters of houses, not including any other kind of land). Thus, the category *"gaothan"* describes a village settlement, but does not describe the *specific kind of settlement.* This creates a very particular problem in the context of current CRZ politics, as fishing villages, together with other kinds of village residential clusters, appear under one category. Since the CRZ accords greater land rights and development opportunities to communities who can prove that their settlement is a "traditional fishing village," it became important for the community members to find state-recognized documents that listed them as "fishing villages." This situation was further complicated by the material conditions of the archives, especially that of the older revenue survey records. The revenue survey was carried out multiple times over the course of nearly a century, and yet, the land records office has no specific system of maintaining these records, which are

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39   This revenue system is a modified version of the "ryotwari system" used to collect revenue from agricultural land under the British colonial government. This still applies to all agricultural land in the district, though as land gets converted from agricultural to other purposes, it moves from the older revenue survey regime to the City Survey Sheet. Thus, many plots of land have individual entries in both survey registers despite the state order to invalidate or remove older records.

40   A revenue village is a much broader category, which might consist of many *gaothans* (residential clusters) and other kinds of land (such as agricultural land, salt pans, commons, land belonging to the collector). For example, Malwani Koliwada is classified as a *gaothan* that falls under *"mauze* Malwani," which is a larger revenue village with many *gaothans* in it. *Mauze* Malwani falls under *taluk* Borivali, which is one of the three sub-districts in the Mumbai Suburban District.

kept as bundles of paper held together by cloth. The City Survey Sheets, which despite being a more recent record, have not been updated in any official capacity.[41]

As a result of these documentary ambiguities, representatives from different fishing villages began gathering and appealing to the government to make changes in the notification that gave them a clear authority over village land. Alongside the public meetings and debates that were held in several fishing villages, representatives from different fishing villages began writing to their elected representatives and conducted meetings with the Maharashtra Coastal Zone Management Authority (MCZMA) demanding that their village be recognized and immediately notified through government circulars as *koliwadas*. They demanded that the MCZMA prepare a map that recognized all *koliwadas* or at the very least publish a document, which listed all the settlements that the government recognized as *koliwadas*. As a result, in November 2011 the secretary of the MCZMA, Valsa Nair, dispatched a letter addressed to the Municipal Corporation of Mumbai asking it to map all the existing *koliwadas* in the city, citing paragraph 8. V (g) of the 2011 CRZ notification:

"…*provide a list of notified koliwadas and fishing settlements of the Greater Mumbai area indicating CTS no.,[42] area, location on map etc., as per relevant records of the Government of Maharashtra, so that development of these areas could be taken up in accordance with the provision of the CRZ notification, 2011. I shall be grateful if you position the progress of the work at the earliest, so as to process the proposals of development of koliwadas from a CRZ point of view.*"

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41   The City Survey Sheets are not updated even when there are changes to plots (for instance, if plots are consolidated or broken up). Instead, these changes are now recorded in individual property records, which are now maintained as a digital database as a part of the municipal corporation's initiative to incorporate e-governance initiatives. Thus, a consolidated record is disappearing and getting replaced by a more diffuse record of individual property records.

42   It is important to make a note of the fact that Secretary Nair asks for CTS numbers (i.e., asking for the number of the City Survey Sheet on which a settlement appears). The appearance or citation of a CTS number allows any member of the general population the opportunity to cross reference the information and make counter claims under the Right to Information Act (2005). Even in the process of writing a letter, Secretary Nair is already anticipating and calling forth other documents and archives that would cross validate the claims of the state even while opening it up to counter claims (which, it can be argued, is a way in which the CRZ becomes a bureaucratic entity, in that it can be engaged and contested by citizens – I intend to develop this as a continuing thread from the first chapter).

At the Municipal Corporation, the directives of the MCZMA and the CRZ were discussed in internal meetings. In a letter to the collector, secretary Nair, and the chairperson of the MCZMA, the chief engineer of the Development Plan,[43] whose department was given the task of mapping the CRZ for the city and demarcating the *koliwadas,* wrote:

"*It is to be mentioned that the koliwadas are identified on the basis of public perception without any distinctive attributes. These aspects have been communicated to the Government in Urban Development Department in the past... In view of above, you are requested to suitably direct the concerned officer of Revenue Department for identifying the areas and extent of Gaothans/ Koliwadas in revenue records. The land records need to be created by the Revenue Department by identifying the exact area and extent of the Gaothans/ Koliwadas, which is required for incorporating the same in CZMP plan for Greater Mumbai area.*"

A month later, another letter was sent to the secretary of the Environment Department updating the secretary about the MCGM's progress in implementing the CRZ. The letter was specifically about "*koliwadas* and the Fishing settlement areas" and the problems in demarcating these areas. The director of the Engineering Services and Projects at the MCGM stated that as the revenue records did not distinguish between the different villages, how could the MCGM state with any certainty whether a given settlement was a fishing village? As a result, the location of the Koliwadas could only be "tentatively" marked:

"*...though Gaothan areas are clearly identified in Revenue Records in terms of tenure of the land holdings, such discriminating records regarding koliwadas are not available. Koliwadas are commonly identified as a densely populated habitat of Koli community since many years. However, there is no such land record available with the MCGM; therefore, koliwadas are identified only on the basis of public perception without any other distinctive attribute. The locations of the koliwadas are therefore tentatively marked on the plan. The area and extent of koliwadas is not known in absence of any such discriminating record. Some of the Gaothans are also commonly known as koliwadas…It is incidentally mentioned here that land records regarding koliwadas need to be created by Revenue Dept. by identifying the exact area and extent of koliwada/ Gaothan, which will be required in the near future.*"

The ambiguity here was that if there were no recognized records that specifically listed a particular settlement as a "*koliwada,*" the MCGM could not give permission for building and redevelopment activity under the CRZ. In relation to the existing records, there was no way

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43   A document that regulated the land-use in the city and sets forth development and growth strategies and goals for a period of twenty years – I discuss this in Chapter Four.

to be certain whether a place was a *koliwada* and whether its residents could claim rights under the CRZ. Even if a settlement was listed and recognized as a *koliwada* on another state document (such as the Development Plan), the municipal officer's position was that there was no way for the state to be certain whether the settlement continued to be a *koliwada*, given the rate of urban transformation in recent decades. The officer at the Development Plan department who had very kindly provided me with copies of the BMC's commentary on the CRZ said, "Yes, we know these areas as *koliwadas*. But are these *koliwadas* "active" – this is what we do not know. If there is no one who fishes there, then I am not sure how the CRZ applies. This we still need to find out. It could also be that there is small Koli settlement and the rest of it is slum. All of this can only be determined by mapping it on the ground. Once I have the order (a directive from the state) to map it, I can begin my work. Until then I must wait."

As a consequence of the ambiguities surrounding documents, their manner of storage and state archiving practices, as well as the ways in which the CRZ framed rights as one based on indigenous identity, *"koliwadas"* emerge as a new category that is required to be surveyed and listed by the state on cartographic documents recognized by the 2011 CRZ. This ushered in the possibility of future surveys that would make these settlements "legible" and as a consequence, provide a channel for legitimizing (and contesting) land claims. However, this process of making *koliwadas* legible was not based on any comprehensive information that could be traced through state documents, but rather one that relied exclusively on visual appearance and on public recognition. This reliance on "aesthetic criteria" is not unique to the CRZ, but is one that shows up in relation to a number of other

initiatives and schemes. For instance, in Ghertner's study on slum resettlement in New Delhi, the author shows the "appearance of filth" becomes the basis for demolitions.[44]

James C. Scott, suggests that this process of building categories in order to govern is an essential characteristic of bureaucratic logic that allows the state to govern what it *observes*:

"The kind of abstracting, utilitarian logic that the state, through its officials, applied to the forest is thus not entirely distinctive. What is distinctive about this logic, however, is the narrowness of its field of vision, the degree of elaboration to which it "can be subjected, and above all, as we shall see, the degree to which it allowed the state to impose that logic on the very reality that was observed." [45] /

Following Scott, Tim Cresswell argues that such urban policies bring forth a "moral geography" where communities are not just assigned identities, but they are also assigned a specific "place" within this geography, which are very much tied up with ideas of sanitation and zoning.[46] The institution of these geographies depends on a systematic process of identification based on visual evidence. While Roy[47] has called this process of relying on visual "evidence" as a kind of "unmapping" of urban space as it overlooks existing information in government records in favor of material and visual signs, the case of mapping the *koliwadas* shows that there is perhaps a more complex relation between appearances and government records at stake.

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44   Ghertner, D. Asher. 2012. "Nuisance Talk and the Propriety of Property: Middle Class Discourses of a Slum-Free Delhi." *Antipode* 44 (4): 1161–87.

45   Scott, James C. 1999. *Seeing like a State: How Certain Schemes to Improve the Human Condition Have Failed.* New Haven: Yale University Press. Pg. 54-55. Though Scott is interested in describing the scientific discourse applied to the governance of forests, this work provides a good opening to think about how forms of categorization get applied in the case of zoning laws.

46   Cresswell, Tim. 1996. *In Place - Out of Place: Geography, Ideology, and Transgression.* U of Minnesota Press. Cresswell is drawing on Mary Douglas's writings on pollution and "matter out of place."

47   Roy, A. 2009. Why India cannot plan its cities: Informality, insurgence and the idiom of urbanization. *Planning Theory*, 8, 76–87

Survey Cultures and the Moment of the Survey

In the winter of 2011, I heard one of the wholesale dealers in the fishing village casually remark that a neighbor of his was involved in a property dispute and that he was going to meet a government surveyor to resolve the conflict. I contacted the property owner, a small time real estate developer who said the dispute concerned an old house owned by his family. He gave me vague details: There was a long standing feud between different members of the family about the property concerned and they had reached an agreement in recent times. The family had tasked him with developing the property in exchange for an unmentioned share of the profits. Upon visiting the property, the developer claimed to have found that the neighbor had constructed a staircase (when he had added a floor to his own house) and the staircase in question, infringed upon his property. After failed informal negotiations, the developer had decided to consult the services of a government survey officer in order to resolve the dispute.

Given the vague contours of the dispute, I was not entirely sure what the role of the government surveyor would be. I imagined that the developer would go to the property and land survey record office to secure a copy of the property document for the plot. The following week, I accompanied a friend from the fishing village to the local land records office to look at the cadastral survey sheets stored there, which documented all the properties in the city at a scale of 1:4000. While the cadastral survey sheets are to be regularly updated, this practice is not generally followed and most sheets provide a record of plots from the last survey (from the 1960s in most cases). These surveys were constructed using the "chain link survey" method. This survey method was standardized in 1620 by a British surveyor by the name of Edward Gunther, who used a chain subdivided into 100 links as a way of taking detailed measurements of individual plots. This chain link survey method

formed the basis of all revenue survey sheets created during colonial times, though the chain measurements still appear on current revenue survey sheets used by the city's municipality. The drawing also recorded specific features on the ground, such as lampposts and post boxes as referents for future surveys and as physical landmarks that would be useful for verifying and revising survey records.

Instead of simply procuring a copy of the survey drawing on which the property appeared,[48] the developer hired the government surveyor to come to the village in a private capacity to resolve the dispute. The surveyor arrived a week later with an assistant in tow who carried a "plane table," a survey instrument akin to a theodolite. In the surveyor's hand was a copy of the cadastral survey on which the property in question appeared (Fig. 32 A and B). We rendezvoused in the developer's office where the surveyor and his assistant were given food and drinks. Following the meal, the surveyor produced a tracing sheet upon which he traced a part of the cadastral survey sheet, after which they were led to the plot where an old dilapidated house stood. The developer's office clerks were instructed to help the two carry out the survey and ensure that they were properly "taken care of."

At the old plot, the assistant set up the plane table on which he affixed the traced sheet. Over this sheet, he laid another and began the process of re-surveying the property on the ground from the drawing. This process can be thought of as a survey in "reverse" as it takes a survey drawing and traces it back on the ground in order to check the extents of property against the drawing. The surveyors meticulously re-drew the boundary of the property in the ground by marking its extents with small flags and laying bamboo poles on the ground (Fig. 33). Simultaneously, the assistant also created another drawing on the plane table, which showed the position of the new construction in relation to the old surveyed plot

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48   The developer later explained to me that the property document would not be useful in solving the dispute and the stair did not appear in the original drawing.

lines. After finishing the survey, the assistant carefully positioned the traced drawing of the older survey in order to understand whether the property exceeded the plot limits (Fig. 34).

I saw the same team of surveyors resolve several disputes in the village where I worked. For instance, I saw the same surveyor resolve dispute between two villagers whose fields abutted each other, where one property owner alleged that the other had extended the boundary of his property into his field. In all cases, the surveyor would recreate the survey on the ground and verify it against the old record in order to verify or dispel their suspicions. The property owners would reach an agreement, based on the drawing created by the surveyor. For instance, in the first case, the surveyor found that the stairwell did indeed protrude into the neighboring property. Based on the drawing, the two owners negotiated a deal where they agreed to share the staircase.

While the owners perhaps do not intervene directly in the act of drawing, these examples do show how the act of surveying itself is not an enclosed relationship between the surveyor and the landscape. But rather, within the culture of surveying in informal settlements, it points to the ways in which the survey acts as an opening for negotiations to take place and for finding ways to resolve conflicts over land. If the survey apparatus – the plane table, the pins and flags put on the ground, the sighting device – can be thought of as what Latour and Woolgar describe as an "inscription device" -- "as any item of apparatus or particular configuration of such items which can transform a material substance into a figure or diagram," then the act of recreating the survey can surely be thought of as a way of actualizing the diagram in the landscape, or as a way in which the diagram re-manifests in the world. However, the ethnographic examples show how the process of moving from a diagram to material objects (in this case from surveys to stairwells and reconstructed boundaries) is not one that depends solely on the expert's authority. In the case of the

surveys, this process presents as an opening where actors such as the fishermen might take part and might also have some agency. In the next section, I show how impending surveys announced by the state present both as a threat and as such an opening – as a chance to participate creation of a survey.

Figure 19: Surveyors preparing to conduct the survey. On the right the assistant is holding the plane table along with the tripod.

Figure 20 A and B: Surveyors verifying the old survey against existing structures on the ground in order to understand whether the building or any of its parts exceeds the property limits.

Figure 21: Surveyors determining the property's boundaries on the ground.

Figure 22: A surveyor comparing the recreated survey against the older drawing.

Materiality, identity, and identification

On a sultry afternoon at one of several public meetings held in 2012, a village representative

began giving a lengthy speech, which I, and several others in the audience, had heard him

deliver many times in other villages. At some point, perhaps upon noticing the mass of

jaded, tired, and sleepy faces, he suddenly broke from his usual spiel and began raging into

the mike:

"Those in power are forgetting about Mumbai's history! They have forgotten that
we, the Kolis, were here before anyone else. The Portuguese could not move us, the British
also tried, but they could not move us. And now look; our own government wants to move
us! We have to remind them that we are Kolis, we are the original inhabitants, and we are the
original Mumbaikars! Jai Koli! Jai Mumbai! Jai Maharashtra!"

His outburst was perhaps spurred by as recent announcement by the municipal

corporation to conduct citywide surveys that would confirm the location and extant of

Koliwadas, thereby deciding which settlements (or fragments of settlements) would

ultimately have the right to development potential. [49] Thus, it was critical to many

communities who could claim an identity as fishers, that their settlements be recorded as

koliwadas in order to command some bargaining power in any future development in the

settlement. However, what remained unclear was the mechanism by which they could claim

that opportunity. Sometime after the notification was released, fishers' organizations and

community representative approached the MCZMA for a list of settlements recognized by

the government as *koliwadas*. The MCZMA, in turn, requested the Municipal Corporation to

provide this list. This request resulted in a series of communications between the two

departments where it became clear that not only was there no official government list, it was

also impossible to produce this list at a short notice as all the surveys in the Revenue

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49   Patwa, Sharvari. 2014. "Civic Body Ropes in Chennai Varsity to Make Coastal Plan - Indian Express."
Accessed September 1. http://archive.indianexpress.com/news/civic-body-ropes-in-chennai-varsity-to-make-
coastal-plan/887057/.

Department, which maintained all the land survey records in the city, showed older settlements in the city under one classificatory category. For instance, both *koliwadas* and agricultural settlements were recorded simply as "*gaothans*" (villages). Thus, it was impossible to use old revenue survey records to identify different historic settlements.[50]

The municipal officials argued that since many of the people who were Koli by caste were no longer working in the fishing industry, it was not clear whether they could be accorded the rights extended to "traditional fishers" under the CRZ policy. The officials suggested that since these settlements had "grown" and become home to many other communities, it was important to conduct surveys in order to determine the "actual" extent (and existence) of *koliwadas*. Consequently, the MCZMA directed the Municipal Corporation to survey and record the location and extent of all *koliwadas* in the city as a part of the state's Coastal Zone Management Plan. As news of this imminent survey circulated, representatives from different villages urged the fisher community to work on the physical fabric of their settlements in order that their "true identity" as a *koliwada* may be revealed to government surveyors. Their suggestions ranged from keeping the streets and beaches clean to working on the external parts of buildings to make them appear as houses in a village.

In addition to working on existing homes, some representatives began actively working with private architectural firms to produce development plans for their village. At a meeting, one village representative described a plan to redevelop his village that had been put together by an architectural firm. He explained that this plan could be thought of as a "model" for other villages. The plan divided the *koliwada* into two areas, one of which would be reserved for commercial development in which the Koli community would have a direct stake. In another part of the village they planned to recreate the "village" low-rise houses

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50   This exchange is recorded in governmental correspondence archived in the MCZMA website: https://mczma.maharashtra.gov.in/html/e_lstLtrs_0311.html

with courtyards and built in shops, thus keeping in line with their community identity and heritage. The first step, he explained, would be to get the community members to realize the importance of maintaining their heritage and identity, especially through repair and construction work on their homes.

These ideas about forging community identity through material work were not restricted to the Kolis alone, and circulated in a wider public domain that linked communities from other urban villages. An edition of a local newsletter, titled "*Gaothan Voice*" (village voice), had a picture of a hut being demolished as a group of people looked on. Skyscrapers loomed in the background and a speech bubble exclaimed, "Let us stay united and this will never happen again." An article in the same edition provided quick tips for remaking homes in ways that would evoke their "village" identity, such as using bright paint and covering up tin and asbestos sheeting with clay tiles. In later issues of the "*Gaothan Voice,*" the same author suggested raising pigs, chickens, and cattle to bring back the "village look" to the *gaothans* (villages) and *koliwadas* of the city. Bringing back the animals, he suggested, would be a sign of reclaiming the space as a village, both visually and aurally, as the cries of people herding the animals would resonate through the space of the village.[51] Such articles no doubt inform the Koli community's strategy to claim housing rights through material and visual work. Similar claims of restoring the "heritage" of fishing villages would often come up during public meetings, signaling the wider domain in which political actions and strategies are forged.[52]

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52 Barreto, Gleason. 2011. Gaothans Sold. In *Gaothan Voice*. October 2011. And 2012. Komdi Palali- Dukkar Palala. *Gaothan Voice*. September 2012.
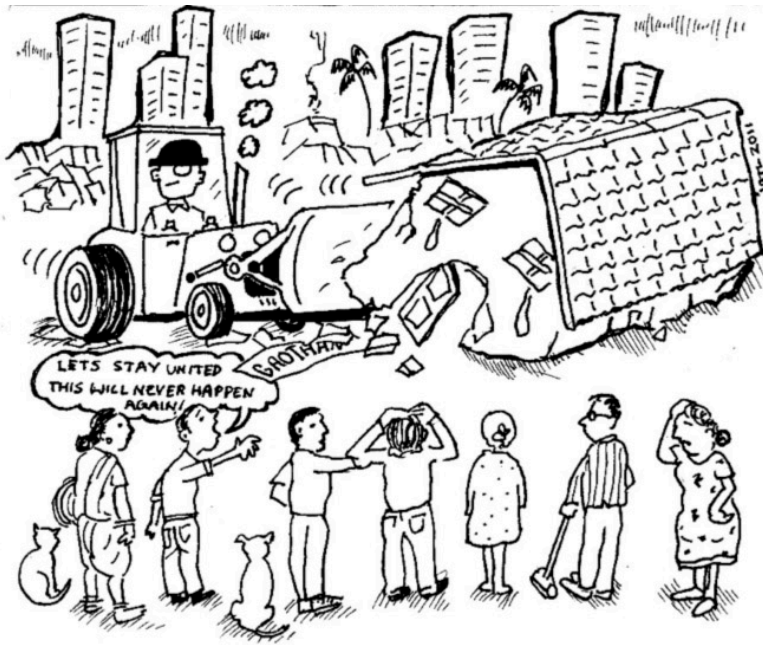
Figure 23: Illustration in the November 2011 issue of the "Village Voice" depicting the destruction of urban villages in Mumbai. Image used with the permission of the author.

Scholars whose work engage the anthropological possibilities of identification and enumeration processes have shown the importance of improvisational practices such as the cultivation of social relationships or through the manipulation of material artifacts as a means of navigating documentary regimes.[53] For instance, in Sriraman's ethnographic study of government officials charged with issuing ration cards, she shows how particular domestic objects such as gas cylinders, stoves, and water connections can serve as evidence or proof of residence. In the absence of documentary evidence, working on or procuring these material and visual proofs becomes important to gaining particular documents or being officially recognized as belonging to a certain community.[54]

Such creative material and visual work is especially important in the case of the CRZ

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53   Gordillo, Gastón. 2006. "The Crucible of Citizenship: ID-Paper Fetishism in the Argentinean Chaco." *American Ethnologist* 33 (2): 162–76.
54   Sriraman, Tarangini. 2013. "Feeling the Rules: Documentary Practices of Rationing and the 'signature' of the Official." *Contributions to Indian Sociology* 47 (3): 335–61.

policy since neither the government nor the fisher community possess any document that recognizes and marks the area and location of *koliwadas* in the city. This is further complicated by the fact that the government defines slums in very material terms – as places of squalor characterized by poorly built and temporary settlements, critically linking rights and recognition with visual and material signs. The fisher community's strategy to gain recognition plays on this connection between materiality and identity to not only recreate themselves as Koli "natives," but also to distance them from migrant others. After the 2011 CRZ notification was released, the Koli community began actively collecting and mobilizing community members in order to claim housing and access to commons under this new policy. Unlike those living in slums, the Koli community was able to mobilize a great deal of political support through regional political parties that champion the cause of the "local" Marathi speaking public over those it terms as "outsiders," thus demonstrating the significance of social political literacy in one's ability to engage the state.[55] In the aftermath of the 2011 CRZ, the Koli community's attempt to reimagine or rework the physical fabric of the settlement can be thought of as collective improvisational moves and strategies which allows them to distance themselves from the material markers that characterize a slum settlement. Indeed, such material and political strategies of deliberate distancing can be thought of as direct outcomes of policy initiatives like the 2011 CRZ.

In recent years the Maharashtra government initiated a project to transform Mumbai into a "world-class" city, which was characterized by massive demolition drives and mass displacement of several families living in informal settlements to the outskirts of the city. At the same time, the government also instituted ward committees in order to increase transparency and community participation in urban governance. Urban scholars such as

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55   Gupta, Akhil. 2012. Red Tape: Bureaucracy, Structural Violence, and Poverty in India. Duke University Press.

Ananya Roy suggest that these developments resulted in Mumbai becoming a "paradoxical space" characterized by both the proliferation of grassroots citizenship movements and "deepening forms of inequality."[56] In the last few years, there have been many new housing, development, and entitlement schemes for those living in unplanned settlements in cities like Mumbai. Each of these schemes relies on processes of surveying and collecting documentary evidence. In such a context, the Koli communities' struggle for housing and development rights can be thought of as both a means of maneuvering through this paradoxical terrain and as a movement that reproduces the struggles and the asymmetrical distribution of rights between different low income communities. This movement is characterized by the use of improvisational strategies to counter the threat of displacement; moving and mobilizing fast enough to claim the possibilities offered by the new policy and working towards maximizing each community's potential to secure permanent and saleable apartment housing. However, such a maneuvering also means the creation of boundaries and distancing oneself from other communities whose housing potential and means of accessing rights is far less.

Through this chapter I have sought to provide an account of the manner in which communities engage the state to gain access to basic rights like housing. I began with an account of how these classificatory categories emerged as a result of events like natural disasters and through a shift towards neoliberal housing and planning methods. Through an ethnographic engagement with fisher communities, I have sought to show how these categories unfold in the lives of those the coastal policy affects. These policy categories that end up creating new boundaries between communities and their struggle to gain permanent housing involves finding creative strategies of fitting within those governmental categories and reproducing those distinct identities by working with visual and material signs that are

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56   Roy, Ananya. 2009. "Civic Governmentality: The Politics of Inclusion in Beirut and Mumbai." *Antipode* 41 (1): 159–79.

linked to those identities. The strategies undertaken by Koli communities provide a point of entry for understanding the ways in which the urban poor work to secure permanent housing through a thick engagement with these new policies, institutions, and the bureaucratic process to reign in the specter of housing in the city.

A Village Scene

In Salman Rushdie's historical account of Bombay in *Midnight's Children,* he sketches a brief, oft heard tale of dispossession. The communities of fishers, known as the Kolis, who were the "original inhabitants" of the islands that became the city of Bombay (later Mumbai), stood by as the city was built on the islands where they lived and the sea where they fished. Before they knew it, they were, "squashed into a tiny village in the thumb of the hand-like peninsula...and you'll find them, trapped between the naval base and the sea." They moved in the new crowd of the city as mute spectators with a "smarting glint of dispossession" in their eyes. The islands transformed into a bustling metropolis, but in Rushdie's imagination, the Kolis remained the same as they continued to fish in Mumbai's waters: "a fort, afterwards a city took their lands; pile-drives stole (and tetra-pods would steal) pieces of their sea. But there are still Arab dhows, every evening, spreading their sails against the sunset..."[1]

This is a story that has been narrated before. Rather, this is the beginning (or appears as *a beginning)* of many stories that are about Mumbai or set in the city. They go something like this: Mumbai was once a set of seven small islands that were divided by marshland and seawater. They were inhabited by communities of people called "Kolis," who subsisted by fishing these waters. From this point on, the stories follow different trajectories, depending on what the various novels,[2] reports,[3] cookbooks,[4] travel guides,[5] documentaries,[6] historical

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1	Rushdie, Salman. 2006. *Midnight's Children: A Novel.* New York: Random House. Pg. 45.
2	Virani, Pinki. 2003. *Once Was Bombay.* Penguin.
3	Government of Maharastra. 1977. The Gazetteer of Bombay City and Island. Gazetteer Department, Government of Maharashtra.

accounts,[7] or ethnographies[8] are about. But more often than not, this opening frame is a familiar one, and one that can be found even in some of the oldest accounts of the city. For example, in "*The Rise of Bombay: A Retrospect,*" after having described the geological process by which the islands were formed S. M. Edwardes writes that, "it was not by the paths of the sea, but from landward that the earliest inhabitants of Bombay journeyed. At some date prior to the year 300 AD, and prior, perhaps, to the Christian era, our desolate isles became the home of certain lithe dark men, calling themselves 'Kulis' or 'Kolis,' which the antiquarian interprets to mean 'Husbandman.'"[9]

Edwardes, who was a civil servant posted in the Bombay presidency with orders to "amplify and revise the public knowledge of the 'Town and Islands,'"[10] had written the same words in the 1901 Census that he had compiled for the government. In his later work, "*The By-Ways of Bombay,*" he offers a very visual account of Bombay as a modern city teeming with people of all classes and from different corners of the globe-- "there too is every type of European, from the albino Finn to the swarthy Italian."[11] The Kolis are depicted as easily recognizable characters who a part of the unchanging "ebb and flow of life" in the city. In his description of everyday life in the city he writes of a scene that is remarkably similar to Rushdie's: walking in the crowds of the modern metropolis that throng its streets are "files of Koli fisherfolk – the men unclad and red-hatted, with heavy creels, the women tight-girt

4   King, Niloufer Ichaporia. 2007. *My Bombay Kitchen: Traditional and Modern Parsi Home Cooking.* University of California Press.
5   Trent Holdon, and Anna Metcalfe. 2009. Lonely Planet: The Cities Book: A Journey Through the Best Cities in the World. Lonely Planet Publications.
6   Dutta, Madhushree. 2006. *7 Islands and a Metro.* 100 min. Documentary. Magic Lantern Foundation.
7   Dwivedi, Sharada, and Rahul Mehrotra. 2001. *Bombay: The Cities Within.* Eminence Designs Pvt. Ltd.
8   Punekar, Vinaja B. *The Son Kolis of Bombay.* Popular Book Depot, 1959.
9   Edwardes, Stephen Meredyth. 1902. *The Rise of Bombay: a Retrospect.* Times of India Press. Pg.6.
10   Obituary Notice."Mr. S. M. Edwardes." 1927. Journal of the Royal Asiatic Society of Great Britain and Ireland 1: 170–172.
11   Ibid.

and flower-decked, bearing their head loads of shining fish at a trot towards the markets."[12] Accompanying this text are illustrations by the famous painter M. V. Dhurandhar, of "stereotypical" urban denizens of the city: the Marwari, the Arabs, and the Koli man among others. These accompanying figures are not shown as a part of the crowd, but rather, appear as isolated figures on a page; their shadows, rising behind the figures, are cast on the white walls of a studio (Fig. 37).

There are several historical works that suggest that there were other communities besides the Kolis who lived on the islands before the Portugese annexed them. Accounts such as Govind Narayan's "*Mumbaiche Varnan,*"[13] (An description of Mumbai), Gerson Da Cunha's "*Origin of Bombay,*"[14] and R. Murphy's "*Remarks on the history of some of the oldest races now settled in Bombay,*"[15] count the Joshis, Bhandaris, Pathare Prabhus, and Pachkalshis as among those who first made these islands their home. However, my intention in beginning with this narrative is not to unsettle it or provide an alternate history of the city. Rather, my intention is to convey how firmly rooted this narrative is. Both in popular imagination and academic works, the Kolis are depicted as people who witness the birth of the city and their presence on the islands predates the presence of the city itself. The "nameless Heptanesia" that was given the name Bombay for the Portugese *"Bom Bahai,"* meaning a "good harbour,"[16] was later renamed Mumbai in order to "highlight the local origins of the city's

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12   Edwardes, S. M. 2009. *By-ways of Bombay.* Echo Library.
13   Madgavkara, Govind Narayan. 2009. *Govind Narayan's Mumbai: And Urban Biography from 1863.* Anthem Press, 2009.
14   DaCunha, Joseph G. 2010. *Origin of Bombay (1900).* General Books LLC, 2010.
15   Murphy, R. 1844. Remarks on the history of some of the oldest races now settled in Bombay. *Transactions of the Bombay Geographical Society.* Vol. 2: 128-139.
16   Rushdie. 2006.

name derived from Mumbadevi, a local goddess of Koli fishermen who originally lived on the islands and marshland that became the city of Bombay."[17]
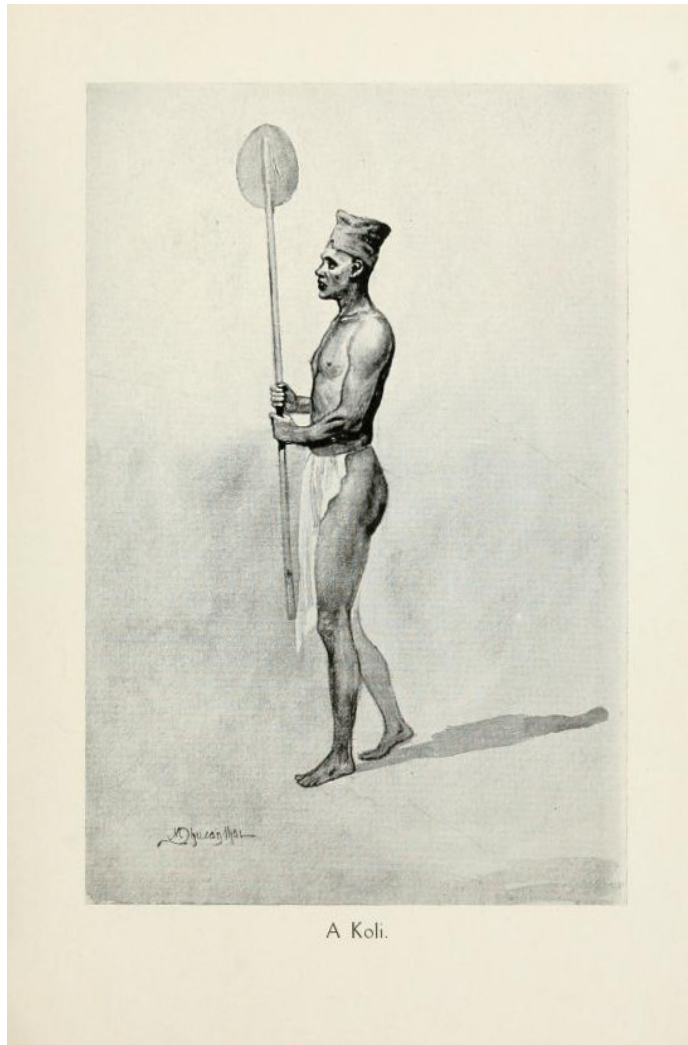
Figure 24: "A Koli" by M. V. Dhurandhar. Illustration in "By-Ways of Bombay"(1912) by S. M. Edwardes.

This chapter tracks the resurgence of this narrative, and with it the figure of the Koli "native," in the context of fishermen's rights and housing and spatial politics in the city. After the new Coastal Regulatory Zone (CRZ) policy was released in 2011, fishermen's

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17   Hansen, Thomas Blom. 2001. *Wages of Violence: Naming and Identity in Postcolonial Bombay.* Princeton University Press. Pg. 1.

committees from different villages in Mumbai began holding meetings to discuss the threats and opportunities that this new policy brought to the fishing communities living within the city. The biggest danger appeared to be that under this new policy, it was now possible to build slum rehabilitation schemes along the coastline of Mumbai.[18] Such development schemes were not allowed under the previous version of the CRZ policy. Under the old CRZ policy, coastal areas were deemed ecologically sensitive zones that were strictly regulated by the state. As such, large-scale redevelopment projects like slum rehabilitation schemes were not allowed on these lands. This meant that a number of people who lived in slums along the coast could not expect to move into permanent housing via the Slum Rehabilitation Authority. At the same time, since coastal areas commanded high prices in the real estate market, residents in both fishing villages and slums were under pressure to sell their houses and land to developers.

On the basis of the research and comments of what came to be known as the Swaminathan Committee, the Ministry of Environment and Forests revised the CRZ policy to allow the construction of rehabilitation schemes on coastal land in urban areas.[19] In its report the committee noted that while the CRZ allowed the construction of *dwelling units* for *local communities* beyond the 200m mark from the high tide line, it was not possible for communities[20] living along the coast to engage in any extensive construction activities as the government had capped all the development in these areas by freezing the Floor Space Index[21] in 1991.[22] Though slums were, the report stated, among the many "unplanned

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18   CRZ Policy Notification, 2011 point (iii) of part (b), section V.
19   Report of the Committee Chaired by Prof. M. S. Swaminathan to Review the Coastal Regulation Zone Notification 1991. 2005. Ministry of Environment and Forests.
20   This includes both fishing village and slum settlements along the coast. The report states that based on the Floor Space Index allowed in these areas, it was not possible to construct rehabilitation schemes or to ensure the repair, upkeep, and expansion of existing houses.
21   Floor Space Index is generally defined as the ratio of built space to the plot area. Thus, it is a measure of the extent to which a given area of land can be developed.

constructions" that had "cropped up" in coastal areas, following the damage caused by the 2004 tsunami, the government had to ensure that *all* communities living along the coast were adequately protected.[23] While the new CRZ policy made it possible for slum dwellers and fishermen who lived along the coast to claim housing and protection from natural disasters[24], it was this change that appeared as a big threat to the fishing community. In this chapter, I look at the process and the creative tactics involved in gaining recognition for the fishing village as a "village." In order to secure the right to develop their settlements on their terms, the fishing communities relied on the altogether familiar claim that the Kolis were the "original inhabitants" or the "natives" of the city, and that their *koliwadas* were the first settlements around which the city had grown.

Throughout my fieldwork, this narrative would constantly reappear in speeches, meetings, and public protests against the CRZ or other urban development projects. Perhaps the best examples of these were the exclamations that terminated all speeches: "We are the original Mumbaikars" or "Kolis are the sons of the soil; we are the natives of Mumbai." At public meetings where the audience comprised residents of different *koliwadas*, local political figures, and sometimes the local press or even builders, community leaders would bemoan that everyone – city dwellers, its politicians, builders, and even Koli people – "had forgotten the city's history." Yet, despite the number of public meetings and rallies that were conducted by different *koliwadas* and organizations like the NFF and the MMKS, what I found during my fieldwork was that much of this struggle happened in the realm of the visual.

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22 Report of the Committee Chaired by Prof. M. S. Swaminathan to Review the Coastal Regulation Zone Notification 1991. 2005. Ministry of Environment and Forests, New Delhi. Section 3.4.22.
23 Swaminathan Committee Report, Section 2.7.5.
24 And some rather unnatural events like the case of MV Pavit, the oil tanker that ran aground on Juhu beach only a few meters away from the settlements along the shore.

In this chapter, I show how this political claim is manifest in non-verbal forms; the ways in which it is evoked through the strategic uses of images, objects, colors, materials, and textures. I track the use of certain images, such as the figure of the native fisherman, and objects like nets and traditional building materials. I examine the elaborate seafood festivals that are organized annually at many different fishing villages across the city. I show how the site of the seafood festival is worked on with photographs, paint, objects, textures and materials in very specific ways. I suggest that when taken together, these different signs act as a visual montage that suggests a scene of a traditional fishing village; it is this scene that, by extension, evokes and reinforces the narrative.

In the absence of adequate government records and with the impending survey on the horizon, the seafood festivals serve as sites that re-articulate this originary narrative for the purposes of the fishermen's struggle and bring out a pre-existing identity of both the Kolis and the *koliwadas*. The objects and images do not just "represent" the narrative and the fishermen's claims, but rather, they *are* where this claim is created, i.e., the visual field and the political field are one.[25] As Chris Pinney describes, these images are not just "a mirror of conclusions established elsewhere" or "'illustrations' of some other force;" they are where the struggle happens and where the struggling is done: "an experimental zone where new possibilities and identities are forged."[26]

The visual experience at the seafood festival does three things: first, it confirms the identity of the settlement as a "*koliwada*" as opposed to a "slum." Therefore it marks its residents as "Kolis" or "villagers" and simultaneously distances them from the community

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25   Kaur, Raminder. 2003. Performative Politics And The Cultures Of Hinduism: Public Uses Of Religion In Western India. Anthem Press.
26   Pinney, Chris. 2004. "Photos of the Gods": The Printed Image and Political Struggle in India. Reaktion Books. Pg. 8.

of poor migrant workers who also live in informal settlements. Through specific objects and images of "native" fishermen and women that are prominently displayed in food festivals and advertisements that circulate in the city, the fishing communities reinforce their claims as "original inhabitants" of Mumbai. Secondly, the careful juxtaposition of images effectively combines the Koli's cause with that of the larger right-wing regional movement to secure the "local" Marathi speaking community's rights. Lastly, as each fishing village in the city faces different kinds of land pressures, the creation of this scene does the work of forging a fragile consent between the various fishing villages and creates a sense of a collective that is brought together by a shared past.

This chapter's story begins with a time when the CRZ had opened up a number of possibilities (both positive and negative) for the Koli community in Mumbai. To make full use of the opportunities (such as the right to "self-develop") and to successfully fend off the threat of displacement, it was important for the fishing community to act and mobilize support before the survey was carried out. That is, this chapter starts with a time right before the map itself is made. Yet, it is also the time when all the communities who would be mapped are well aware of the potential of that survey. By looking at these other events around the CRZ map and the BMC survey, I show how maps get entangled with other systems of representations, and become socially embedded in local visual practices. Thus, I aim to show how the relation between the map and the mapped is perhaps not as direct as it may seem; on the other hand, it may simply be the case that it is "geographic reality" that is drawn on a map. It could be that this geography itself takes on many forms; thereby opening up a number of possibilities for the way it could be drawn. In such a case, I look at the importance of reining in those possibilities in order to control the outcome of the drawing.

In the next section, I look at how this claim is made at the popular seafood festivals by unpacking the viewers' experience of the festival. From here, I examine the pictures of native fishermen and women used in these festivals, and associated objects that are also used as props – oars, boats, fish, and nets – to show how this claim emerges through the visual experience of the festival. In section three, I trace the genealogy of these pictures to show how the photographs used in the festival offer a different construction of native identity than the images from the colonial archive. Through the works of two prominent local artists, I look at how the image of the native takes on different meanings over time. In the last section I look at the ways in which the language of an official survey operates in relation to these claims.

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The Ocular Dynamics of a Seafood Festival

Versova Koliwada is located on the tip of a finger like stub of land, in Andheri West, an affluent suburb in Mumbai. It is surrounded on two sides by the Malad Creek, on the third by the Arabian Sea, and on the fourth, by the expensive apartment buildings and complexes that run all along JP Road. The Malad Creek that surrounds it is an inter-tidal zone with dense mangroves, in the middle of which is a large sewage treatment area that dumps treated waste into the creek. Depending on the tide, the water in the creek moves back and forth swirling all the matter it collects, both treated and untreated, and eventually dumping everything out towards the sea. While the marshy edge of the creek and the beach along the sea provides a natural and obvious boundary, the entrance to the settlement on its landward side is marked by a traffic island with a statue of a fisherman and woman with a boat (Fig.

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38). Here, the road makes a sharp right turn, and this statue denotes that the area beyond the stream of traffic is a *koliwada*. However, this edge is more blurred than it appears. From the point where main road turns and runs towards the settlement area, it is lined with shanties to the back of which runs the beach. Between the beach and the shanties are spaces where fish is dried, catch is sorted, and the fishing gear stored (Fig. 39 and 40). Thus, parts of the Versova fishing village extend beyond the tight residential core, and are closely interwoven into surrounding urban fabric. A comparison of a historical map of Versova Koliwada with a recent satellite map hints at the growth of both the surrounding areas and the settlement that has happened in the last few decades (Fig. 41 A and B).

Figure 25: Statue of a Koli couple on a traffic island at the entrance of Versova Koliwada. The man is carrying an oar and the woman is carrying a basket filled with fish.

Figure 26: View from the beach side looking towards the main road.

Figure 27: View of the access road and beach from the main road. On the left are lines for drying fish and on the right as sheds and informal houses.

Figure 28 A and B: Maps showing the growth of Versova Koliwada and the development of Andheri (w) suburb. Picture A from Google Maps® and Picture B is taken from Vinaja Punekar's ethnography titled "The Son Kolis of Bombay," 1959, Popular Prakashan.

The Versova seafood festival usually runs for three days in late January and is attended by hundreds of thousands of people annually (See Fig. 42). Versova Koliwada was the first to hold a seafood festival in the city and, in the past few years, several other fishing villages have adopted this program of having an annual festival as a means of increasing their community presence. In 2013, the festival was in its seventh year. While the main objective

of the festival is gastronomic, with all kinds of seafood for sale, it is also a deeply political space through which the fishing communities respond to threats and opportunities opened up by the new CRZ policy. The event itself is highly publicized and attended by a huge number of people from the city; local political figures and film and television stars are roped in to give speeches and performances. This makes it an ideal public platform through which the community can position itself in relation to the CRZ, claim itself as a "village," and rally other citizens and politicians to support them in making such a claim.

I had joined forces with Sagar Shiriskar, a photographer and cinematographer working in Mumbai. Our idea was to produce a photographic documentation of the festival. The main goal of this documentation was not to provide a visual list of all the parts of the festival and its objects. The idea was to show the kinds of "productive possibilities" visual technologies offer these communities and the ways in which they are wielded to make complex claims on space through the visual medium. Our focus was the visual experience of the festival: what visitors would see, how they were positioned, and the careful construction of backdrops and visitors' gaze through which this space was marked as a "village."[27] In terms of a "visual strategy," we decided we would arrive early to take pictures of the stalls, the *koliwada*, and the set up activities. As the festival crowd got stronger we would split up – with Sagar working from the stage area and I would work from within the crowd, as it would also allow me to interact with the festival organizers I had gotten in touch with.

By eight o'clock on Saturday night, the festival ground was filled with thousands of people. Near the stage where the cultural programs were taking place, there was hardly any room to move. The podium and the backstage area occupied one side of the festival grounds

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27   Along with this idea we were also excited about working and playing with images as a way of doing and presenting fieldwork, and doing this as a collaborative exercise between two people who work with visual media differently. The photographs taken in this chapter are jointly attributed to Sagar Shirishkar and myself.

and the space facing the podium was cordoned off to accommodate a seated audience which was now overflowing into the central aisles and the space around this area (Fig. 43). On the wall behind the podium and backstage area were extremely large posters sponsored by the Shiva Sena, and the Mahharashtra Navnirman Sena. Bal Thackeray, Raj Thackeray, and Udhhav Thackery's visages loomed over the audience, overlooking the festival space (Fig. 44). The food stalls were all located on three sides of this central area, along the periphery with seating arrangements and tables directly in front of each stall. Stalls selling dried fish, pickles, chutneys, and other preserves were located right along the entrance.[28] The organizers had left space between the stalls and the performance area so visitors could move freely between these spaces. But an hour into the festival, the stalls, seating area, and the ground were all overflowing with people, making movement impossible.

Each of the stalls had a canopy made of pristine white fish net over the seating area. Caught in this fish net were polystyrene replicas of pomfret, *surmai, bombil,* lobsters, and shrimps – the most sought after fish and the main ingredients of the most popular seafood on sale (Fig. 45 A and B).[29] The stalls were divided into a sale area and a cooking area, which backed onto the boundary of the festival grounds. Manned by men and women dressed in traditional festive attire, they functioned as a live diorama of sorts. All along the top, enlarged replicas of "prize catch" hung in the canopy; on one side of the sale counter the real catch was marinated and skewered (Fig. 46). In the makeshift kitchen the cooks were frying fish after fish or turning the tub of *biryani,* after which the food was boxed and handed

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28 One of the organizers speculated that this was perhaps meant to cater to the busiest members of the crowd who only had time to "Come, eat, and leave" (*Aaneka, khaneka, janeka).*

29 Vikram Doctor, a blogger for the Economic Times makes the observation that the seafood offered at these festivals, though delicious, is usually the popular and familiar fare like shrimp *biryani* and fried pomfret. Unfortunately, there does not seem to be much room for experimenting with the seafood or introducing lesser-known fish to the public.

Doctor, Vikram. 2012. Versova's Fish Festival also showcases the Koli community culture. *Economic Times.* January 27, 2012.

over to the buyer. Another part of the sale counter was covered with food items on display intermingled with fiberglass models of prawns, crabs, and miniature boats. The entrance to the festival itself was decorated with a boat that was hoisted on top of the entryway, along with another kept on the side (Fig. 47). The top or the sides of each stall was covered by a large board advertising the family or group's name along with a picture of a fisherman, woman, or child dressed in traditional clothes (Fig. 48 and 49).

The stall that I was standing under had a picture of a Koli woman in a blue sari (Fig 50). Her hair was tied in a bun and decorated with flowers. Her head was resting on her hands, she was looking off into the distance, and her body and gaze seemed to convey a blissful anticipation. Behind her, waves were rushing onto a beautiful beach. Towards the left a small, mechanized boat was presumably going off to fish in those blue waters. In the foreground was a digitally repeated pile of pomfret – abundant catch that the boat might bring back. The figure of the woman, although beautifully bedecked, obviously represented a "typical" Koli woman in the midst of the daily chore of waiting for the boats to come back so they could take over the next part of the business, which was sorting and selling the catch. The stall to the right had a picture of a Koli couple, and to the left was an advertisement with pictures of children in traditional attire that had perhaps been cut out of studio pictures. At the festival, men and women dressed in traditional clothes cooked in the kitchen, manned the stalls, bussed the tables and guided the crowd to their family's stalls. Occasionally, one would be asked to pose for a picture, and the crowd would be made to part (Fig 51). Then the obliging man or woman (almost always woman) would be photographed posing against a background of the stalls, fish, pictures of other Koli men and women.

Figure 29: View from the stage looking into the crowd at the Versova Koliwada seafood festival.

Figure 30: The festival was organized around a central seating area looking towards the stage, with stalls surrounding this space on three sides.

Figure 31: Large political posters on the wall behind the stage serve as a backdrop to the program.

Figure 32 A and B: Styrofoam fish hang in nets above the food stalls.

Figure 33: Food is prepared in stalls. Fish, lobsters, and shrimp are displayed in the foreground (and cooked in the background).

Figure 34: Boats used as decorative elements at the entrance

Figure 35: Images of children dressed in traditional clothes.

Figure 36: Picture of a Koli couple at the Versova festival.

Figure 37: Signage on a food stall with a picture of a Koli woman watching the fishing boat.

Figure 38: Women dressed in traditional clothes bus tables and pose for pictures.

Since Sagar was busy taking pictures on the podium, I made my way through the crowd to one end of the stalls and stood under a large picture of a Koli woman, our designated meeting spot. Mr. Ajay, one of the organizers of the festival spotted me and came over. Like the other organizers and main guests, he was wearing a business suit with a tie

with a red fisherman's cap on his head. As he was introducing me to his wife, he told me that the stall were I happened to be standing belonged to his family. At that moment a loud roar erupted through the crowd; on the podium, the band had struck the first notes of "*Mi hay Koli*" (I am Koli), a very popular number. With a loud hiss, the fog machine filled the stage with smoke and the dancers took the stage in pairs. Like the statue at the entrance of the village, the women were carrying fish baskets and the men carrying replicas of oars made of bamboo and cardboard. The light on the stage changed from a bright yellow to blue and then to red, and the jimmy-jib operator swung his camera back to capture the action. As the roar quietened a little, Mr. Ajay turned to me with a smile and said, "Of all the Koli songs (*Koligeet*), this one is most popular. Every time it plays, everyone starts shouting and dancing. It is like this every year. (It is because) we say it with so much enthusiasm '*Mi Hay Koli*,' the crowd gets energized because the feeling comes through."

I asked him how long the festival had been running and he replied, "We started in 2006. See what happened, there was a Mumbai Festival in 2005. Do you remember that?" I replied that I vaguely recalled it but couldn't be sure. "So we all went to see some programs in this festival. In that whole festival there was not a single mention of Koli people or Koli culture, we were not included at all. And I was very surprised. Can you imagine a festival about Mumbai without Kolis? We were here before everyone and we are part of the city's history and here they were having a festival without any mention of Kolis. They had forgotten we exist. So we went to the festival organizer and requested that they also add a 'Koli component.' There that organizer asked us what exactly we had in mind...whether we wanted to highlight seafood or dance or what. That's when the idea came to us that we can have our own festival."

"The first year when we organized this, there were just a few families. I had to drag some of my relatives and insist that they open stalls! No one wanted to do it, everyone was complaining it was too much work. But then so many people came, we ran out of food in one hour! This festival has grown a lot since then. And now we have different families coming from other villages and booking stalls here. You saw that stall from Madh village at the entrance? Yes, see, this festival it is bringing the fishing villages together and it is reminding everyone that Kolis are here in Mumbai, we haven't gone anywhere."

Onstage, the dancing had ended and several guests had been ushered on stage to address the crowd. A man dressed much like Mr. Ajay in a business suit and a red Koli cap came on stage and addressed the crowd with the words "*Mi hay Koli!*" (I am Koli!) and the crowd echoed his words back. Then, assuming a more serious tone he said, "Respected brothers and sisters of *Versova Koliwada*, I thank you for inviting us to your program. As you all know, there are several problems facing the Koli community today. We must stand together against the corrupt builders and politicians who want to take our lands! Show us the names of all the *koliwadas* in Mumbai's survey maps! *(Mumbaicha Saat-bara madhe Koliwadyancha naav daakhva)*"

The program was punctuated by many such speeches throughout the evening; the different representatives who took the stage during the festival made very similar speeches entreating the Koli community to come together and claim their rights as the "sons of the soil" (*Bhoomiputra*) and the "original inhabitants" of the city. After each speech, the band would strike again and the singers would assemble in different combination and begin singing the next song. For most of the program, the same dancers would arrive on stage to execute beautifully choreographed and energetic dances throughout the evening. Sometimes,

celebrities such as participants from reality dance shows would take the stage to perform a Koli or Lavani number.

Later in the evening, Mr. Ajay asked me if I was still working on the "CRZ issue." I nodded my head and he exclaimed, "Then this will be very good for you! It is good that you came to the festival!" I asked him if he could elaborate what he meant. He said, "This festival is very important in relation to the CRZ issue. The most important thing is that through the medium of the festival, people realize that a Koli society still exists here. It reminds them of that, and it reminds them of the city's history. When anyone comes here and sees the *scene* of this festival, they immediately realize that this place is a *koliwada*, this is our fishing village; this is not the scene of a slum! So for the CRZ, when the government surveyors come here they will also see that. When the surveyor comes here, he will immediately realize that 'this is indeed a *koliwada.*' (*ye asal main koliwada hai)"*

Figure 39: Koli performers on stage, the band is to the right

Figure 40: The performances were interrupted by speeches such as the one pictured here. Several local politicians, scientific officers from the Fisheries Institute, and local celebrities took the stage wearing fishermen's caps.

Figure 41: Women decked in festive clothes bussed tables and posed for pictures.

Figure 42: A pair of performers posing for a picture.

This claim -- that a *koliwada* is not a slum -- forms one of the most critical points in the Koli community's quest for housing and land rights post the 2011 CRZ notification. Post the CRZ notification, access to *koliwada* land and public commons such as fishing grounds hinged on the Koli community's claim of being the native inhabitants and the traditional fishing community of the city, and on their ability to prove that claim. This proof was gathered not just through the collection of relevant documents that could be submitted to authorities such as the BMC, but also a kind of visual evidence that marked the space and the community as distinctly "*koliwada*" and "Koli" respectively. Thus, it was essential that these be visual signs that were immediately recognizable by other citizens of Mumbai, and especially, the mythical government surveyor who would visit the *koliwada*. As my conversation with Mr. Ajay reveals, much hinges on this visual recognition. It falls upon the visual signs that circulate within the festival grounds to bring out the "true identity" of that space and of those people.

Within the experience of the festival, these visual signs combine in different ways. For example, when the speakers take the stage wearing red Koli caps, they are simultaneously juxtaposed against the seascape background of the stage and the large political hoardings placed behind the stage. The brightly dressed Koli women bussing the tables are photographed against their digital counterparts, along with real and styrofoam fish (See Fig. 54 and 55). In this sense, these visuals function as what Pinney terms as a set of "parallel indexical traces"[30] that combined in many different ways in the experience of the festival and brought out that identity over and over in these constant multiple juxtapositions. Thus, this mythical surveyor, upon "realizing" that this was indeed a place where fish was caught, sold, and dried, where men and women were dressed as fishermen and were indeed fishermen, would then mark the space as a fishing village.

If we go back to one of the advertisements from the fishing village – that of the cut-out portrait of a beautiful Koli woman pasted against a backdrop of the sea (Fig. 50)– we can see that a kind of "creative manipulation"[31] is at work in images such as this one and others that abound in the seafood festival. The advertisement itself is a digital composite of several different images. The first is the image of the Koli fisherwomen, perhaps cut out from a portrait shot at a local studio, the backdrop is another image, and a mass of pomfret are replicated from one image and grouped together to represent the bountiful catch. This digital technique of cutting, pasting, and repeating elements to create a "composite scene" has its roots in older practices used in the production of "ethnographic" albums and also in the kinds of creative montages that were used in studio photography. In such an image, very often the subject would be photographed against a blank backdrop in a studio. This image,

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30   Pinney, C. 1998. Camera Indica: The Social Life of Indian Photographs. University of Chicago Press.
31   Tankha, Akshaya. 2010. Early Precendents: Ethnographic photography in Bombay 1855 – 1870. In The Artful Pose: Early Studio Photography in Mumbai 1855- 1940. Eds Partha Mitter and Raahab Allana. Mapin Publishing Pvt. Ltd.

once developed, would be cut out and juxtaposed onto another background to produce a composite print. In some pictures, images of Koli men who are posed around an overturned fishing boat are set before a background of a seascape with a few other boats visible on either side of the figures. Many different studies of compositing in photographic practices have shown how these manipulation techniques are used to convey the relation between the sitters and the landscape in which they are posed and thus, the way in which the subject must be read.[32] Pinney notes that by putting together these "parallel visual traces" new meaning emerges from the visual association created between the different images. That is, new ways of reading these sets of images may emerge that were perhaps not within the scope of the individual image.

Most of the pictures that are used to create these digital composites come from portrait pictures of women and children taken in local studios. In Malwani fishing village, which was where I was based for most of my fieldwork period, many of the houses had pictures of the children dressed as adults in traditional clothes, photographed against a blank studio background. Some of the older pictures featured an elaborately painted beach scene on a studio wall. Some others simply grafted the individual's face onto a painted image of a Koli woman; thus transforming it from a homogenized and freely circulating image of Koli woman to one that portrayed individual identity and was meant to be viewed and displayed within the confines of the domestic space. In the digital composites displayed in the Koli seafood festivals, it is these kinds of individual portraits that are digitally detached from their original canvas and appended to other backgrounds, along with other images such as those of fish, nets, and boats, to produce images that grace the tops of food stalls and festival walls, and circulate in the city in the form of banners and hoardings. In these new images,

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32   For more about ethnographic photography see Poole 1997, Tankha 2010, Pinney 1997.

old meanings associated with colonial possession disappear, and new ones associated with an urban struggle take their place.

Placed in the festival, these digital composites combine freely with other visuals and objects in the viewer's gaze to construct the "realization" of being in a particular place and among particular people. My conversation with Mr. Ajay shows how this sense of being in a place – a slum, a village, or a city -- is evoked through particular visual signs that mark it as "that" place and not any other, and in that manner, confirm its identity. In the case of the seafood festival, it is the pictures of the native fishermen and women, the nets, and the fish that are vital to marking it as a *koliwada*. In marking it as a *koliwada*, they also simultaneously distance it from the slum; the bodies of the residents of this community are thus identified as the native Marathi fisherman as opposed to the body of a migrant worker. In the next section I look at the how the images of the "native Koli fisherman" serve as a vehicle for joining the Koli's struggle for rights with the mainstream, right wing regional politics. This way the Koli's struggle gets connected to the larger movement of securing jobs, lands, and rights for the larger Maharashtrian community who are projected as the "locals" of the city. I begin by tracing the genealogy of the image of the "native" Koli and look at how this image has shifted over time to understand its use in the present socio-political context of millennial Mumbai.

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Scopic Strategies, Image Histories, and Regional Politics
The Bhau Daji Lad City Museum in Mumbai has a large collection of clay figures and busts from the late 19th and 20th century that are miniature models of the different "types" of

communities that inhabited the city during that period. This large collection of figures is stored on the upper level of the beautiful museum, and the first model that greets visitors into this area is a clay bust of a Koli fisherman. Under the bust is a full-length miniature clay figure of the fisherman wearing a high red hat, a buttoned shirt with a scarf and a triangular *dhoti*. The adjoining text, adapted from *Peoples of Bombay* by Percival and Olivia Strip (1944), describes the Kolis as "one of the few aboriginal tribes of Dravidian origin... The Kolis work and live as agriculturists and fisherman (sic) and have changed little since they arrived in Heptanesia (ancient name for the "seven islands" which is now Bombay)... You can see their settlements in Colaba, Worli, Mazgaon and the nearby suburbs of Bombay."[33] Other depictions of Kolis in the collection include a set of figures showing a Koli couple, with the man holding a fish. In another area, a miniature clay figure of a "Kolin" (fisherwoman) is shown hanging *bombil* fish to dry (Fig 56 and 57).

Clay figures or "dolls", like the ones in the City Museum, traveled to across the globe to events like the Melbourne International Exhibition in 1880. Smith and Stevenson's research on similar figures in the Museum Victoria's collection places them within a framework of economic and cultural exchange.[34] Such Indian clay figure collections were acquired by many different institutions around the world and were much sought after by collectors in India and abroad. Smith and Stevenson suggest that as such, these figures were not meant to be handled or used for any form of play (as the name "clay doll" would suggest) but were items that would be put on display as a part of an "ethnological collection."

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33   To clarify, this text is simply given as a description of the Koli community; there is no text that contextualizes and places this text within a broader framework of colonial ethnographic writing.
34   Smith, Charlotte, and Michelle Stevenson. 2010. Modeling Cultures: 19th Century Indian Clay Figures. Museum Anthropology 33(1): 37–48.

Partha Mitter places these clay figures within a broader framework of shifting art practice in colonial India. He writes that in the early 19th century, after the establishment of the East India Company in Bengal, a demand for "realistic representations of people, plants, animals, and life that were seen to be typically Indian -- nautch girls, Parsees, priests of various deities, ayahs, Brahmins, sepoys and so forth" emerged.[35] As this demand for art in the more realistic "European" fashion increased, many local artists were able to survive by producing watercolors, drawings, and clay figures in what came to be called the "Company style." Many artists were employed by the East India Company for the purposes of documentation, which was seen as vital for establishing control over their new territory. Along with topographical, architectural, and archeological drawings, these artists also produced "ethnographic sets," which were folios of watercolors and drawings of different castes, tribes and professions, which were "eagerly collected by the English 'picturesque' hunters."[36] Thus a large body of this documentary artwork emerged, of which these clay figures of Koli fishermen are a part. With the advent of printing technology, these watercolor folios and clay figures were displaced by mass produced prints, and in the late 19th century, by photographs.

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35   Mitter, Partha. 1995. Art and Nationalism in Colonial India, 1850-1922: Occidental Orientations. Cambridge University Press.
36   Mitter. 1995.

Figure 43: Clay bust of a Koli man with a miniature full-length model placed below at the Bhau Daji Lad City Museum.

Figure 44 A and B: Clay figures of a "Kolin" (fisherwoman) and a Koli couple from the Bhau Daji Lad Museum.

These ethnographic images share certain traits that act as visual cues to the identity of the figure portrayed. In these early drawings and watercolors, almost all the figures are shown frontally, oftentimes as pairs (man and wife), and sometimes as groups. For example, see Fig. 57 B, which depicts a fisherman and his wife. These figures would often be sold as sets along with other pictures that depicted other castes and professions. The figures would

be dressed in attire specific to their caste or occupation, and would often carry implements as clear visual evidence of their trade. For example, in another clay figure at the Bhau Daji Lad Museum marked as "*Kolin*" (fisherwoman), which depicts a woman drying fish, there is no way to identify the figure as a "*Kolin*" other than the drape of her sari, and the finely made strings of fish that have been rendered to appear as the extremely familiar *bombil fish* (Fig. 57A and B).

Figure 45: "Fisherman and his wife" (Malabar, India, 1830?) From a series of 12 paintings of castes and occupations, showing a man and his wife with the implements of their trade. From the Victoria and Albert Museum.

The use of photography to document different races was closely tied to this increasing concern of "scientific accuracy" in human classification.[37] Similar to the painted folios, many photographs would show individuals standing or seated against a blank

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37   Wright, Christopher. 2003. "Supple Bodies: The Papua New Guinea Photographs of Captain Francis R. Barton 1899-1907." in *Photography's Other Histories*. Eds. Christopher Pinney, Nicolas Peterson. Duke University Press. 146–169.

background, or as groups posed with relevant cultural artifacts. A detailed description often accompanied these pictures, narrating the way in which the physical body of the posed subject could be read as an index of associated characteristics. Oftentimes, these photographs would be accompanied with other records such as thumb impressions and outlines of hands and feet, maps, or sequences of images that showed particularly technology used by those tribes. In his history of photographic practices in the British Empire, Ryan concludes that this photographic practice "did more than merely familiarize Victorians with foreign views: it enabled them to symbolically travel through, explore and even possess those spaces."[38]

These image-making practices became a means of constructing not just racial identity, but also a way of constructing identities for geographic space. Along with the communities and tribes that were documented in these drawings and pictures, it was also space and objects that came to bear the mark of having a particular identity. Landscapes, scenes, streetscapes, also came to be regarded as representing the essence of a national or regional character and possessing a distinct identity.[39] This notion of a "spatial identity" was strengthened through the extensive geographic and revenue surveys carried out by the officers of the British Empire where the extensive use of photography (such as for recording details, or views) was an intrinsic part of the survey endeavor.[40]

Deborah Poole shows how artists and intellectuals working in the post-colonial era begin disturbing these notions of race and type despite using the same technologies and

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38   Ryan, James R. 1997. Picturing Empire: Photography and the Visualization of the British Empire. University of Chicago Press.

39   Jager, Jens. Picturing nations: Landscape Photography and National Identity in Britain and Germany in the mid-Nineteenth Century AND Gregory Derek. Emperors of the Gaze: Photographic Practices and Productions of Space in Egypt, 1839-1914. In *Picturing Place: Photography and Geographical Imagination.* 2009. Eds Joan M Schawrtz and James R Ryan. I B Taurus.

40   Ryan, James R. 1997. Picturing Empire: Photography and the Visualization of the British Empire. University of Chicago Press.

formal methods that produce them.[41] In the hands of the Indian artists and photographers who took on these emerging visual technologies in the early 20th century these ethnographic images were reworked in ways that displaced the colonial gaze in interesting ways. Akshaya Tankha's meticulous study of photographs attributed to William Johnson and Narayan Dajee [42] shows how their works "constituted much more than the precedents of ethnographic photography alone, drawing on a wider canvas of graphic arts and visual culture." Both Dajee and Johnson would seat their photographic subjects in a studio against a clear background. This picture would them be composited on to a montaged landscape (See for example, Fig. 59).[43] Tankha argues that the ways in which both these photographers posed and wrote about their subjects, sometimes providing a biography of their subjects or attempting to place the figures in a wider socio-cultural context, unveil a certain playfulness that allows the image to be read in ways contrary to the colonial project.[44] In the following paragraphs I look at how the genre of ethnographic images has shifted over time from being about visual documentation where the main focus was to capture the subject as "truthfully" as possible, to opening up to include elements of portraiture and figure drawing. Through the works of two artists, M. V. Dhurandhar, and Mario de Miranda, I show how these caste identies were displaced by urban "characters," such as the stereotypical Koli fisherwoman.

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41   Poole, Deborah.1997. Vision, Race, and Modernity: a Visual Economy of the Andean Image World. Princeton University Press.
42   Narayan Dajee was the brother of Bhau Dajee for whom the Bhau Daji Lad City Museum is named.
43   Of course, we see shadows of this kind of compositing technique in the digital composites that proliferate in places like the seafood festival.
44   Tankha. 2010.

Figure 46: Koli fishermen, by Narayan Daji.

In 1865, an artist named John Griffiths arrived from South Kensington to take charge of the painting department at the J.J. School of Arts in Bombay. The art school in Bombay was established in 1856, made possible by a generous gift by Jamsethji Jijibhai, a wealthy Parsi industrialist who was impressed by the success of Indian arts and crafts at the Great Exhibition of 1851. While the primary purpose of the school was to train native artisans and craftsmen, it did initiate a drawing program the year after its inception. However, the focus of the drawing studio was to train the students in a "scientific" manner of drawing, which would make them adept at copying ornaments and objects correctly.[45] While Griffiths's major achievement is thought to be his detailed copy and survey of the Ajanta frescoes, he is also known for his vivid watercolors of people and scenes of different parts of India.[46] In 1872, Griffiths painted a watercolor sketch titled *"Woman holding a fish"* which depicted a Koli woman carrying a large fish on her head. Unlike its predecessors, the

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45   Mayer, Roberta A., and Lockwood De Forest. 2008. *Lockwood de Forest: Furnishing the Gilded Age with a Passion for India.* Associated University Press.

46   Mitter, Partha. 1995. Art and Nationalism in Colonial India, 1850-1922: Occidental Orientations. Cambridge University Press.

ethnographic images made in the Company style, Griffths's image is more of a study of human form. In keeping with the method of figure drawing of the time, Griffiths's figure is drawn with more classical proportions, which are accentuated against the white studio-like background. The figure is not drawn head on, but sideways, her face concealed behind her arm that is supporting the extremely large fish.

Figure 47: "Woman holding a fish," John Griffiths, 1872. Watercolor, Height: 42.8 cm, Width: 24.7 cm

Griffiths and Lockwood Kipling were responsible for setting up drawing studios at the JJ School of Arts for the express purpose of teaching pupils about drawing the human figure in the manner taught in the western art academies. Upon his death, Cecil Burns, who was later the director of JJ School, wrote that one of Griffiths's biggest contributions to artistic practice in India was the establishment of the figure drawing studio that trained a number of "native" artists who went on to become teachers in many schools in the Bombay presidency. [47] Among Griffiths's most famous students was Mahadev Vishwanath Dhurandhar, who later became the first Indian director of the school. Dhurandhar produced several different paintings of Koli women that were clearly inspired by Griffiths's painting (Mitter 1994). One painting depicts a similarly attired woman who is also carrying a large fish on her head. This painting appeared as an illustration in Otto Rothfeld's *Women of India,* which was published in 1919. However, in Dhurandhar's version, the woman has her back to the viewer and is walking into the endless space of the background (Fig. 61). In another version, a Koli woman has placed her fish basket on the floor and appears to be in the process of sitting down to sell it (Fig. 62). Unlike Griffiths's painting, which is simply titled *Woman holding a fish,* the illustration in Rothfeld's book is titled *Fish-wife of Bombay.* At the beginning of this chapter I quoted a passage from S.M. Edwardes's *By-Ways of Bombay,* which was also illustrated by Dhurandhar. Rushing through Edwardes's Bombay crowd is a Koli woman, "tight girt and flower decked" hurrying to the market to sell her fish (Fig. 63). In the same book, Dhurandhar also draws a Koli man, an Arab, and a Sidee trading family – in a manner that follows older documentary practices. What changes is that instead of being described as belonging to a particular "race" these figures now emerge as "types" who inhabit a city. Thus, Edwardes' book features a man possessed by a fisherwoman's spirit runs

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47 Burns, C. L. (1909). The Functions of Schools of Art in India. *Journal of the Royal Society of Arts*, *57*(2952), 629-650.

towards the creek, a rather plump Marwari selling sweet *batassa* seems to be caught in mid-cry, and another picture accompanies the sad story of Imtiaz Khan, a legendary dancer from Bombay (Fig 64 A, B, C, and D) – a mixture of characters who inhabit a metropolis in which the Kolis occupy a particular place.

Figure 48: "Fishwife of Bombay" by M. V. Dhurandhar in Otto Rothfeld's "Women of India" 1919.

Figure 49: Bombay Fisherwoman" M. V. Dhurandhar, 1899.
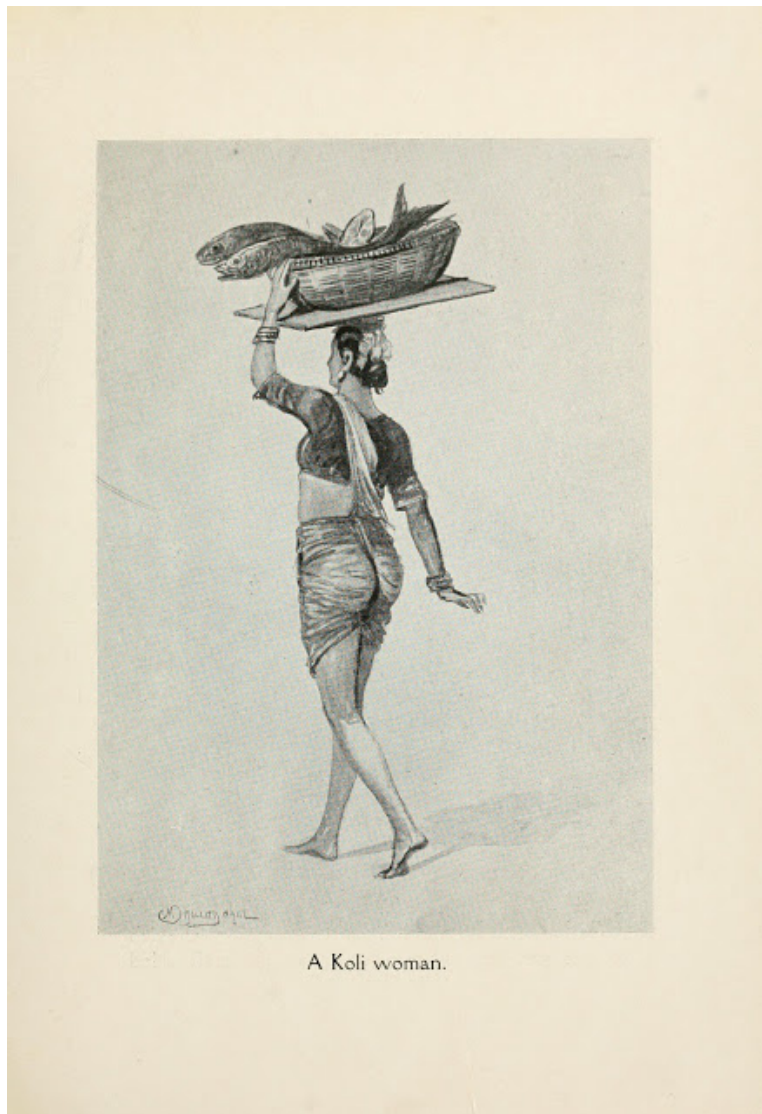
Figure 50: "A Koli Woman" by M. V. Dhurandhar in S. M. Edwardes's "By-ways of Bombay"

Figure 51: Other "characters" from the "By-Ways of Bombay"

Kajri Jain remarks that throughout his wide ranging career, Dhurandhar managed to maintain a "close association with the colonial art establishment, his images were naturalist illustrations of themes from textually defined 'culture' and 'civilization.'" Despite the "colonial" inclination in his works, Dhurandhar sought to foster a distinctly "Indian" naturalism, for which, at the time, there was an increasing demand both in the art school circuit and in the market for mass produced prints.[48] Both Mitter and Jain write that Dhurandhar's work was pivotal to the creation of a regional identity. There are perhaps two interconnected reasons why Dhurandhar's work was able to evoke these ideas of a regional identity for a broad public; apart from the visually compelling and animated quality of his illustrations, he was also had a prolific career as an illustrator of "mobile" graphic media such as magazines, advertisements, calendars, and postcards.[49]

Picture postcards featuring different people and views of India were very popular in the late 19th and early 20th centuries. In keeping with the documentary tradition, the people portrayed in these postcards were classified based on caste and profession. Postcards that showed aspects of life in the colonies – views, servants, exotic people, places and objects – were very popular among holidaymakers and colonial officers alike. For example, Fig. 65 shows an image of a sweeper (titled "*Mehtaar"*) at the door of a house. In another postcard titled "Bombay Policeman," a constable is show photographed against what looks like an administrative or office building built in the Neo-Gothic style. His face is devoid of expression; he is standing in attention and facing the camera.

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48   Jain, Kajri. 2007. Gods in the Bazaar: The Economies of Indian Calendar Art. Duke University Press.
49   Mitter. 2010 Jain. 2007.
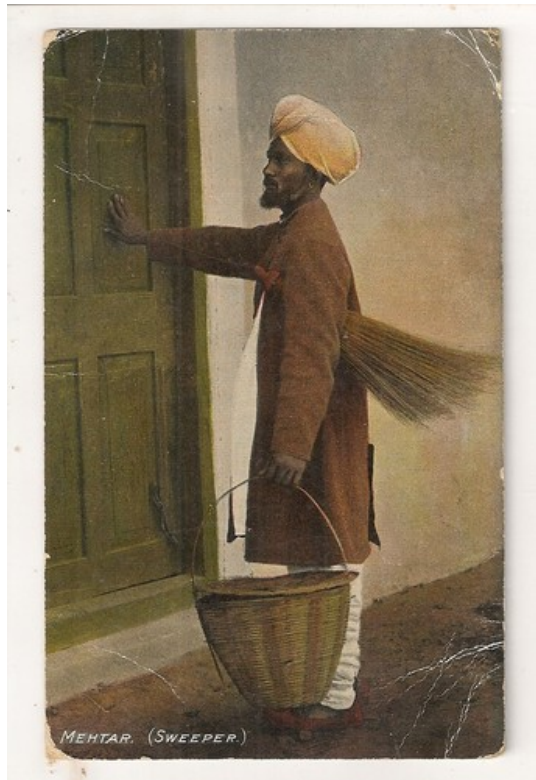
Figure 52: "Sweeper" Postcard, early 1900s.

Figure 53: "Bombay Policeman" Postcard, date unknown.

The Bombay Policeman

Figure 54: "The Bombay Policeman" by M. V. Dhurandhar, Postcard (1910?).

In contrast, Dhurandhar's policeman, who is also wearing the same uniform as the policeman pictured in Fig. 67, seems far more animated. His head is thrown back, he twirls an umbrella in one hand, and his face bears a happy expression. Allan Life, in his meticulous research on Dhurandhar's illustrated postcards, argues that his illustrations ran against the grain of typical postcards, often providing an "alternative" view of the life of those represented in them while retaining his training of drawing in the European style. While Dhurandhar would draw these with the "ideal" Neo-Classical proportions, he also managed to break that ideal by introducing a characteristic sense of humor in the urban subjects he represented. Towards the end of his life he illustrated Percival and Olivia Stripp's "*Peoples of Bombay*" that sought to "document" the "cosmopolitan population" of a city that embraced "not only types of men and women from all over India, but nearly all parts of the world." Life writes that many of Dhurandhar's early picture postcards anticipated these contemporary urban subjects. Illustrations by artists such as Dhurandhar and later, Mario De Miranda, were vital to the construction of the image of Bombay as a heady, heterogeneous mix, where all kinds of "characters" inhabited the crowd.[50]

Around the time that the *Peoples of Bombay* was published, a young artist named Mario De Miranda, began working with an advertising firm in Bombay. Miranda, who had no training in art, got his first break drawing cartoons for *The Illustrated Weekly of India*. Over the course of his artistic career, Miranda made several drawings of city life. These drawings, akin to the one described by S. M. Edwardes and Rushdie at the beginning of this chapter, were inevitably filled with the dense crowd of people of "all kinds;" many of whom became

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50   Life, Allan. 2001. Picture Postcards by MV Dhurandhar: Scenes and Types of India—with a Difference. *Visual Resources* 17(4): 401–416.

regulars in his comic strips. In a cartoon titled *"A Rainy day in Bombay,"* one can see a Koli fisherwoman hurrying through the crowd. Unlike most others in the picture, she does not carry an umbrella, protected instead by the large basket of fish that also identifies her as a fisherwoman. Behind her, a Parsi man and his wife are fighting (Parsis were also a favorite subject of photographers who wanted to document "natives" of Bombay), while she is walking completely unperturbed. Other denizens of the city include cavorting couples, street urchins, dogs, lecherous men, attractive women, office-goers, and others who are out simply to enjoy the rain. In another similar cartoon called *"The sidewalks of Bombay"* a fisherwoman hurries through the crowd while a man holds his nose and stares at the fish. In *"Welcome to Bombay,"* a "happy" Koli woman with a basket of fish can be seen walking into a restaurant that serves fish and chips. Historian Gyan Prakash notes that Miranda "gave us memorable city figures... Using the cartoon form, Mario's pictorial illustrations were works of art that depicted Bombay's mongrel and chaotic world with humor and acute observations." [51]

Figure 55: "A Rainy Day in Bombay" by Mario Miranda, with detail.

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51 Prakash. 2010.

Figure 56: "Sidewalks of Bombay" by Mario Miranda. Detail on the right.

In both Dhurandhar and Miranda's work Kolis, Parsis, traders, priests, singers, actors, and other people of the city are rendered as urban stereotypes who inhabit the city of Mumbai. While perhaps in Dhurandhar's case the characters still seem to have the appearance of being in a studio and do not really interact with each other, in Miranda's work they are outside in the bustling and hectic metropolis of post-independence Bombay from the 1950s to the 80s. Both Dhurandhar and Miranda deployed a visual trope used by the colonial empire and completely turned it on its head to produce the image of a growing metropolis that had the space for all kinds. Within this shifting tradition of depicting city life, some qualities remain, such as the identification of characters and their professions by their clothes or implements they carry; and certain enduring characters who become the basis for identifying the crowd as a crowd from Bombay, such as the Parsis and the Kolis. By the 1950s the isolated figures from the studio seem to venture out in the city and by the 80s, they have turned into Rushdie's raucous crowd. Yet, while the city grows to become a

"chaotic, mongrel" metropolis, all is not entirely well with this picture.[52] Kolis, more specifically the Koli woman, continue to be rendered in the same manner. Her body, clothes, and gear index her caste and profession, and while she moves through the crowds, the class divide between her and characters like the Parsi woman are clearly visible.

It is interesting to note that Koli men are rarely depicted in these images. In both Dhurandhar and Miranda's work, it is Koli women who are completely engaged in their work and always represented in transit – moving between spaces to sell their wares. What marks them as Koli women are fish, fish baskets, and the drape of their saris. Similar visual cues show up across the artistic spectrum. Artist B. Prabha's paintings of Koli women often show them by the sea, or in front of fish drying lines, or holding fish baskets (Fig. 70). "*Sailaab,*" a very popular Bollywood film that was released in 1990, featured a hit song with actress Madhuri Dixit dressed as a fisherwoman. What made the scene instantaneously recognizable as taking place in a fishing village was that Dixit was wrapped in a fishing net while other Koli women and men (wearing red caps and the triangular *dhoti)* were dancing against the backdrop of the sea, with fishing boats and lines for drying fish (Fig. 71). Poole suggests that there are two kinds of transformations taking place in such images: on one level, the interest in depicting this costume "homogenizes" women into an "idealized folkloric type," and on another level, the individual is reduced to a " scientifically constituted image or 'type.'"[53] In terms of the relations between each of the characters in the crowd, it is clear that the city does not afford all of these characters equal space and opportunities.

While several scholars use the term "ethnographic" as a way of describing colonial image practices, Rebecca Brown suggests an alternate reading. Brown argues that an "ethnographic" reading "leads us to overlook one of the primary things these paintings

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52   Prakash. 2010.
53   Poole. 1997.

depict: an image of doing, not simply an image of do-er."[54] Interpreting these images as depicting "action" or "work" rather than caste, Brown writes, enables us to see the different tensions and temporalities at work in these images. In some ways, we can think about Dhurandhar and Miranda's work as inviting this kind of productive interpretation where the images are not *only* about caste identity, but lay claim to a specific place within the city.[55]

Figure 57: Fisherwoman by B. Prabha, 1960.

Figure 58: Madhuri Dixit as a Koli woman In "Sailaab" 1990.

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54   Brown, Rebecca M. 2013. "Colonial Polyrhythm: Imaging Action in the Early 19th Century." *Visual Anthropology* 26 (4): 269–97. Pg. 282.
55   This leads us to ask, "Do the images made by Koli's reinforce an "ethnographic" reading in that the images they produce are meant to evoke a caste identity?" This is not so clear.

Thomas Blom Hansen, in his detailed account of the socio-political scenario that led to the city's name being changed from Bombay to Mumbai, writes that while it is often remarked that the events that completely shook the city's cosmopolitan image were the serial blasts and the riots of 1992-93, notions of an "ideal Bombay" that preceded these attacks were far from the reality of its urban life. In the 1970's the regional political party called the Shiva Sena, began gaining ground. The Shiva Sena was led by Bal Thackeray, and was based on a "nativist agenda of claiming Bombay and all of its symbols of modernity and power to be the natural property of Marathi speakers."[56]

Though I do delve into the city's history in greater detail in the following chapter, at this point, however, I would just like to emphasize that the rapid urban transformation fueled by the real estate boom that began in the late 1990s produced a great deal of land pressure on communities like the fishermen and on those who lived in slums and worked in the city's large informal sector. The CRZ notification of 2011 appeared as another layer on this existing urban pressure; amplifying the threat of displacement and loss of livelihood while also opening up new possibilities. It is against this backdrop of rising urban tensions that the figure of the Koli native re-emerges within a framework of claiming land and housing rights. The Koli women pictured in the festival advertisements are no longer simply women going out to sell fish. Their beautifully dressed bodies, which were perhaps shot in a studio as a personal portrait, completely reorient the character of the fisherwoman who (in both Miranda's and Dhurandhar's images) peddles her wares oblivious to the weather and the gaze of others, looking resolutely ahead. Instead, here she confronts the viewer's gaze,

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56 Hansen, Thomas Blom. 2001. *Wages of Violence: Naming and Identity in Postcolonial Bombay.* Princeton University Press.

both in the circulating advertisements and in the act of stopping for a picture at the festival (Fig. 72). Within the space of the festival, while the Koli performers dance against the backdrop of a beach scene with fish, they are also dancing against images of corporate sponsors, political figures, and advertisements; all of which seem to imply a kind of urban mobility. I suggest that it is this visual shift that does the work of placing the Koli community at the center of land struggles in the city (Fig. 73). In the following paragraphs I look at the way in which this new image of the Koli native combines with political images, and joins the Koli cause to that of regional right wing politics in Maharashtra.

Figure 59: Advertisement for Koli festival circulated online, source unknown.

Figure 60: Koli performers standing near advertisements and corporate banners.

Well before the road turned towards the fishing settlement, a large sign announced the festival. The sign had a large photograph of Raj Thackeray, the leader of the Maharrashtra Navnirman Sena, a right wing, regional political party. The reflection on his sunglasses caught the crowd of people who often come to witness his fiery speeches. Under Thackeray's image were rows of headshots of party workers and local political representatives and the text on the poster welcomed all seafood lovers to the festival. I found similar posters all around Andheri and as we were walking towards the festival; the same image made an appearance at regular intervals, tied to lampposts and gates (Fig. 74). At the end of JP Road, near the site of the festival, there was a similar poster printed by the Shiva Sena. However, on this poster, photos of the late Shiva Sena supremo Bal Thackeray

and his son Uddhav Thackeray urged their viewers, "We must not cry, (we must) fight!"

(*Radaicha nahi, ladaicha!*)

Figure 61: Poster declaring political patronage at Koli Festival.

In 2008, MNS chief Raj Thackeray inaugurated the Koli Festival at Dharavi *koliwada*. Raj Thackeray established the MNS in 2006, following a split with Shiva Sena (which was run by his uncle Bal Thackeray until his death in 2012). Both parties champion the rights of the "Marathi Manoos" (Marathi public) and are famous for their vociferous (and often violent) opposition of migrant workers from other parts of the country. Raj Thackeray's inaugural speech at Dharavi *koliwada* in 2008 was a familiar reflection of his party's xenophobic ideology. The speech urged the Kolis to take an active part in their community's development:

"*If anyone talks about rights over Mumbai city, then the ones who have the most valid claim are the Kolis...The other day a number of Koli mothers and sisters came to my house and complained that the 'Bhaiyas' had taken over their business and they did this and that...But I ask, 'How could they take it? It is because you have made a lot of money buying and selling fish over the years and have become rich. Now you are no longer willing to sell fish, you are ashamed. So someone else has come to take your work. But I say-- do honest work and then come to me, I will support you and provide you with whatever you need...*"

Simultaneously, it was also a verbal attack against migrant workers from the northern states such as Uttar Pradesh and Bihar and their annual Chhat Puja celebrations in the city:

"*How did these new things like "Uttar Pradesh Day" start? There was nothing like this before...then where did it come from? Maharashtra will celebrate only Maharashtra Day and no other state will be allowed a festival!...What is this Chhat Puja? I am not against this puja; what I oppose is the manner in which it is celebrated and what it stands for. This is not a puja, but a way to show you their strength and to say -- 'Look how much we have progressed! Look, how far we have established ourselves in your state!' So all these celebrations on Girgam Chowpatty, Juhu Chowpatty, they are all ways of displaying their strength right in your face. I am not so stupid that I don't understand that...And the sad part is that all these leaders from Shiva Sena, BJP, and Congress in the BMC have decided to give tax exemption for Bhojpuri cinema. To Bhojpuri cinema?! What about Marathi theater and Marathi cinema, they have done nothing for that. But they will go to any lengths to secure votes.*"[57]

When the MNS organized a Maharashtra Food festival *(Mi Marathi Khadyamahotsav* or "I am Marathi Food Festival"[58]*)* in 2010, it was widely regarded as a way of broadening their appeal among the city's middle class Maharashtrian population.[59] Vikram Doctor, a writer for the Economic Times suggested that this was perhaps "one of the few congenial ways that the MNS has ever tried – to raise the party's profile before the next round of state elections."[60] When the MNS followed this with the Koli seafood festival in 2011, it was seen as a way of securing the Koli community's support in the upcoming BMC elections. Several newspapers suggested that these festivals were sponsored by political parties like the MNS to strengthen the party's ties with the community and expand their voter base in the city. In the case of the seafood festivals political support seemed to run both ways as the festivals

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57 The entire speech is available online at: https://www.youtube.com/watch?v=1IpWzVCkbSw
58 I ask the reader to bear with the imperfections of the translation.
59   Packel, Dan. 2011. Snacking with the Sons of the Soil. *Gastronomica: The Journal of Food and Culture* 11(1): 67–70.
60   Doctor, Vikram. 2010. *Food Festivals and Election Feasts.* Economic times. http://articles.economictimes.indiatimes.com/2010-04-29/news/27628814_1_marmite-bnp-food (Retrieved 04-13-2013)

became important sites where the Koli community sought support for its own cause – especially after the 2011 CRZ notification. These well-attended events became a means of garnering both political and popular support for the particular *koliwadas* that organized them. Doctor himself recognizes this in another post that he wrote on the *Versova Koliwada Festival*:

"Mumbai's fishing villages are facing multiple threats. They far predate the modern city, yet are deemed untenable anachronisms, not least by builders who covet their valuable sea-facing land. Because of their age-old practice of sun-drying Bombay duck and shrimp, they are decried as unhygienic and smelly by their apartment block neighbors, many of whose own garbage disposal practices may be dubious. And now they are seen as security risks, after the 26/11 terrorists calmly docked at the one near Nariman Point.

Which makes Versova's defiance all the more admirable. Perched fairly far in the north of the city, it is the most unaffected of all the main fishing villages, though given how fancy buildings are springing up outside on Yari Road, it's anyone's guess how long this will last... This village has now taken to organizing an annual seafood festival, which took place last weekend, to showcase both its reason for existence and its Koli community culture. This is the best kind of defiance. It asserts the village's roots and heritage while also emphasizing its vote-bank value to the local politicians who line up to sponsor congratulatory hoardings. But rather than get confrontational with newcomers, it welcomes them with food, songs and dances, and the spectacle of all the ladies decked up in matching saris and major gold jewelry as they fry fish while the men wear odd red hats and brightly patterned lungis."[61]

In all the debates and literature on the fishing community's land rights, what rarely gets mentioned is that the movement to secure the community's rights is fundamentally based on the active marginalization of "migrant" communities. One of the fallouts of the 2011 CRZ notification was that it deepened the schism between the "local" Koli population and what was termed as the "migrant" population, both of whom lived in dense informal housing settlements in pockets of land along the city's coast. D. Parthasarathy eloquently explains this conundrum in his article on urban development and the interests and rights of the "hunters, gatherers, and foragers" in Mumbai. The interests of communities such as Kolis who live by catching fish are often not included in Mumbai's urban development

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61   Doctor, Vikram. 2012. *Garam Masala: Mumbai High-Versova's Seafood Festival.* In On My Plate, Blog for the Economic Times, Mumbai.
http://blogs.economictimes.indiatimes.com/onmyplate/entry/garam-masala-mumbai-high-versova-s-fish-festival (Retrieved 04-30-2013).

plans. However, as he writes, the process of claiming rights for these native communities is often based on a direct opposition of "migrant" communities.[62] In several cases, these migrant "others" may include people who have been staying in the community for several years, and are for all other purposes considered a part of that community. This kind of "ethnic mobilization" revealed itself several times in the short speeches that were given during the Versova seafood festival, proclaiming their "natural" right to land as the "natives" of Mumbai and exhorting absent government officials to remember the city's history and recognize their claim. It is precisely this claim that is made manifest through the images, signs, advertisements, and decorative objects.

In the space of the Koli festival, another kind of compositing is at work. These digitally created images along with objects like fishing nets and replicas of fish, place the Koli cause within the broader framework of regional politics in Maharashtra. For anyone visiting the seafood festival, pictures of these fishermen and women, nets, and fish, along with large portraits of political figures like Bal Thackeray and Raj Thackeray completely filled in the cone of vision. Any time a small crowd gathered to take the picture of a woman dressed in "Koli costume," a local celebrity, or a television actor, the picture would inadvertently be taken against the backdrop of any one of these large hoardings of political figures or native fishermen (Fig. 75). I have already described how this kind of active composition created by the viewer (who is perhaps the mythic government surveyor) navigating the space of the festival brings different elements in the festival space to produce a certain dynamic scene. As these different elements come together in the viewer's gaze, they bring forth both the claim that a critical part of Koli identity is that they are "natives" of Mumbai, and the claim

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62 Parthasarathy, D. 2011. Hunters, gatherers and foragers in a metropolis: Commonising the private and public in Mumbai. *Economic and Political Weekly*, *46*(50), 54-63.

that their lands were the "original' villages that became the city (and thus their claim to that space is inviolate). At the same time, in its combination with images of political patronage, this visual montage folds the struggle into the framework of regional politics (Fig 76). As much as this visual "scene" making pulls a certain past into the present, it also serves as a projection into the future: by gathering public sentiment and political support, it offers to the Koli community the possibility of participating in the city's future and seizing the developmental opportunities thrown up by the new CRZ.

Figure 62: Local representatives posing for photographs.

Figure 63: Performer posing for photograph with a picture of Raj Thackeray in the background.

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A Historical Record that Charts the Future

Along with all the political posters at the *Versova* Koliwada Festival, there was one other rather unusual poster that faced the entrance of the fishing village. The poster, printed by the Association of Women Fish-sellers of Marol Bazaar, had a blue background of a beach scene with words written in bright yellow (Fig. 77). The words, which were perhaps addressed to the nameless government surveyor in my conversation with Mr. Ajay, demanded that *koliwadas* be recognized by marking them on Mumbai's land records (these records are called "7/12 extract" or "*saat-bara utara*"):

"Don't give threats! Don't resort to regionalism!
Enough politicking!
Is Mumbai's 7/12 blank? Give the Koli peoples' names!
Mumbai belongs to Kolis, and not to anyone else!"

At the bottom left corner of the poster was an inset of a map with a red dot signifying the location of the fishing village. As I stood reading the poster, a cheeky young man standing near a small truck called out laughing, "Madam, the *koliwada* is over there!" Implying that I was taking pictures of the wrong place and wrong things. I started to turn round and try and leave when an older man who was also standing by watching me take a picture said, "Go inside and you will see that this is our village. This is a place where Koli people live. This is not a slum."

The saat-bara extract (also referred to as saat-bara, or simply 7/12), which was frequently mentioned in several speeches during the festival and also at different points in my field work, is a type of property record that is maintained by the Revenue Department of the Maharashtra state. It provides details of agricultural land or land that was converted from the agricultural to the non-agricultural category. Though the saat-bara is no longer used as a property record in Mumbai, the term "saat-bara" is used in common parlance in Marathi when referring to the property card, or simply to mean, "survey." In this context, the term is used in relation to the survey the MCGM intended to conduct in order to identify the existing *koliwadas* in the city. When a poster or a representative demands that government officials "show the *koliwadas* in the saat-bara," they mean that all the fishing settlements must be marked and recognized as *koliwadas*, Kolis must be given access to land for housing and for carrying out activities related to fishing, and most importantly, these spaces (and by extension the communities) must not be labeled otherwise – as slums, mixed use spaces, or as residential areas.

*F*igure 64: *Fig. 1: Poster printed by the Association of Women Fish-sellers of Marol Bazaar*

The saat-bara as a revenue document has many parts and details. Apart from specifying the owner of the land, it provides other information such as the kinds of crops sown on that land, quantity of produce, and details of taxes paid and court-cases related to that land. Attached to each saat-bara is also the "*ferfar*" report that gives details about the history of the land and changes in ownership. In many ways, the Koli's claim for land rights is akin to opening a saat-bara of the land in question, and looking at all its attached details and opening the *ferfar* report where the Kolis emerge as the first inhabitants; who by virtue of being the "original inhabitants" have a "natural" claim over the land, its resources and opportunities. In this sense it revives the originary narrative of the city where the Koli's were the first to inhabit islands upon which the metropolis of Mumbai grew. When the saat-bara

is combined with the image of the survey in the poster, it brings together the form and the official language of the survey. The saat-bara becomes an important means of speaking to the state in the official language of the survey document. Simultaneously, the saat-bara, along with the other visual signs in the seafood festival, become an important means of intervening in the moment of the survey, and of addressing a mythical state surveyor in order to control how names, identities, and categories get recorded and appear on the final survey sheet.

Alternate Plans and Visions

On October 23, 2013, thousands of people gathered *Azad Maidan*, a large open space in the heart of Mumbai. The crowd, led by the leaders of prominent NGOs in the city, presented the Municipal Commissioner with a document titled *"People's Vision Document for Mumbai's Development."*[1] The document was the result of a widespread movement demanding transparency and public participation in the state's planning processes. The movement was led by two NGOs, Youth for Unity and Voluntary Action (YUVA) and Urban Design Research Institute (UDRI), who had organized meetings, rallies, and outreach programs in communities across the city to craft a document that brought together their different needs. The cover of the *People's Vision* illustrated this as faceless individuals standing in front of different civic offices (Fig. 78). The *People's Vision* is a significant event in the history of planning practices in India, not only because of the scale at which the movement was carried out and the disparate set of actors it brought together, but also because it marked an instance where the Municipal Corporation of Greater Mumbai (MCGM) had accepted the suggestions of a large body of citizens; suggestions that had been put together through an entirely unofficial process.[2]

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1   "Mumbai's Urban Poor Demand Inclusion in Development Plan." *The Hindu*, October 23. http://www.thehindu.com/todays-paper/tp-national/mumbais-urban-poor-demand-inclusion-in-development-plan/article5263233.ece.

2   In early 2015, the MCGM released the new development plan, and I talk about this document a little more at the end of this dissertation.

Figure 65: Cover of the People's Vision document.

The *People's Vision*, is perhaps singular in terms of the number of people it managed to get together, but certainly not unique as a "participatory" enterprise. During my fieldwork, the fishing village where I worked was also the site of a participatory planning project, which was perhaps far more modest in terms of scale. Some time in late 2010, a batch of first year students at the Kamla Raheja Vidyanidhi Institute for Architecture (KRVIA) was sent by their professors to a nearby fishing settlement of Moragaon Koliwada, a low rise, high-density urban settlement, to study the built form in the settlement. The students were immediately questioned by the residents of the settlement and promptly dispatched, after the community expressed their displeasure towards the acts of measuring and drawing. However, a little while later, Mr. Rupesh, who introduced himself as a "village

representative"[3] from Moragaon, approached the professors at the school with a proposal to make a "development plan" for the village. The idea was that this "plan" would provide possible solutions to the problems faced by the community: ways to increase housing and add civic infrastructures such as roads, garbage collection, and additional toilets, facilities that the community lacked. The college professors agreed that this could be a way for the students to conduct their studies while also helping the community in return, with the understanding that this was simply to be a "conceptual plan" (that is, a plan that presented ideas for possible solutions). As this conversation progressed, the faculty decided that such a project could be taken up by a more senior batch of students as a part of their fourth year urban design studio. In the mean time, another village located in the northern suburbs of Mumbai, Malwani Koliwada, was also added as a part of this comprehensive studio exercise; this village later became my primary field site. In addition, the studio was expanded as a joint exercise with the students from Tata Institute of Social Sciences (TISS). Right from the start, both schools emphasized that this was an academic exercise, and thus, the plans would have a limited scope in terms of execution.[4] This project would merely set the tone for future urban interventions in settlements like *koliwadas*, but an actual plan would have to be worked on after the studio exercise and in some sense was beyond the studio's scope.

On the village representatives' part, the decision to produce a plan was predicated by two events: the revision of the city's Development Plan and the recently released Coastal Regulatory Zone Notification (CRZ). In 2011, the Municipal Corporation of Greater

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3   A "village representative" from a Koliwada is usually the elected head of the local fishermen's co-operative society or a former elected representative, though sometimes people who were members of the co-operative also assumed this term. This term was generally used both as a means of introducing oneself at a public meeting and as a way of claiming the authority to speak for the community. In this case, the village representative from Moragaon was a member of the co-operative society there and a prominent member of the Maharastra Macchimar Kruti Samiti (MMKS).

4   Hence the term, "conceptual plan," where the word "conceptual" is supposed to signal the notion that this is simply to be taken as an "idea" or "possibility."

Mumbai (MCGM) began revising the city's "Development Plan," commonly called the DP, which are a set of plan drawings and projections that regulate growth and land use in the city. A public movement, initiated by a group of NGOs working for urban causes, grew around the revision of the DP. It called upon the Municipal Corporation to make way for increased transparency and "public participation" in the making of the new DP. It was this movement that ultimately led to the making of the *People's Vision* document.

At the heart of this movement was the idea of a transparent, free, and unfettered circulation of documents like maps and plans between the government agencies, planning bodies, NGOs, and citizens' collectives. This is evident in the form this movement took online – the websites and pages dedicated to "increasing participation" carried several links to documents that citizens were urged to download, scrutinize, and circulate.[5] Central to both the state led mapping projects of the CRZ and the DP, are visions of transforming Mumbai into a modern, global, and "green" metropolis by instituting environmental reforms. As fishing communities depend upon and live within coastal areas, demarcating and regulating these settlements was an important task in both these initiatives. Consequently, the fishing communities became an integral part of these projects and at the intense focus of the state's developmental vision.

In looking at endeavors like the *People's* Vision and the studio exercise in the fishing villages, this chapter deals with the question: What is at stake in producing "conceptual" plans – plans that have no "official" force as such – and what kind of political claims does this act of drawing allow for communities like the fishermen? I situate this question and the studio exercise conducted by the two schools within the broader context of public

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5 A timeline of UDRI's process can be found here:
http://www.udri.org/index.php?option=com_content&view=article&id=104&Itemid=14. Last accessed 24 March 2015.

movement formed around participatory planning in Mumbai. While the studio exercise is informed by the broader socio-political discourse advocating people's participation in planning, it also acts as a lens for viewing the kinds of forces and tensions that inhabit a public movement such as the revision of Mumbai's Development Plan. In a landscape where decentralized planning practices have given rise to a new public that is critically engaged in urban planning, I suggest that for communities like the Kolis, the very act of *drawing a plan* becomes a means of realizing a political potential, despite its "unofficial" status. It becomes a way of maximizing the claims they can make (such as to housing, land, and infrastructure) and a means of strategically positioning themselves in relation to other communities participating in the city's spatial politics. I make this argument through an ethnographic study of the participatory planning exercise while situating it in relation to the genealogy of planning practices in the city, post the institution of urban reforms that were instituted two decades prior to the revision of the plan.

<p align="center">+++</p>

Development Plan, CRZ, and the studio exercise

As I have explained in previous chapters, under the revised terms of the 2011 CRZ, residents of settlements that were "recognized" as Koliwadas (fishing villages) by the state reserved the right to develop these lands, their houses, and install facilities that would aid fishing communities.[6] In the case of Greater Mumbai, this revised policy has opened up

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6   The FAQ section of the CRZ states: "For the traditional fishing communities (namely, the Koliwadas) living in Greater Mumbai a provision has been provided, wherein, the area concerned shall be mapped and declared as CRZ-III and development including construction and reconstruction can be taken up as per local Town and Country Planning Regulations." See: Frequently Asked Questions on the Coastal Regulation Zone Notification, 2011 and Island Protection Zone Notification, 2011. Ministry of Environment and Forests.

coastal land for redevelopment, and most importantly, to slum rehabilitation projects and for developing fishing villages.[7] While the new policy made it possible for slum dwellers and fishermen who lived along the coast to claim housing and protection from natural disasters, it was this change that appeared as a big threat to the fishing community. In the eyes of the fishing community, the danger that this policy change had created was that the fishing "village" could be just as easily declared as a "slum."[8] This, in turn, meant that a private developer could use that status to force its residents into slum rehabilitation schemes. For *koliwadas* like Malwani and Moragoan, the need to make a plan for their settlements was, in the words of their representatives, framed as the means to "develop their settlements for *themselves* and not under the pressure of any builder lobby" that might take over their land. However, this right to develop their lands depended on their ability to prove their status as *"koliwadas"* to the state through documents such as revenue surveys, city surveys, but perhaps most importantly, by showing that they were demarcated as a *"koliwada"* in the city's Development Plan (DP).[9]

The Development Plan, or the DP, as it is generally known, is a plan that sets the zoning, land use, and major infrastructures and amenities for the city and is revised every twenty years. While the current DP was revised in 1981, it was not passed by the Municipal Corporation until 1994, and is set to expire in 2014. Thus, the representatives' move to

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7   This revision was made under the recommendation of M.S. Swaminathan Committee report, which suggested that informal settlements along the coast must be rehoused as they were particularly vulnerable to disasters like tsunamis. This was not possible until now as the government had capped all development in these areas by freezing the Floor Space Index. See: Report of the Committee Chaired by Prof. M. S. Swaminathan to Review the Coastal Regulation Zone Notification 1991. 2005. Ministry of Environment and Forests, New Delhi. Section 3.4.22.

8   This was also because not all Koliwadas are marked in the Development Plan. As a result the Municipal Corporation has ordered fresh surveys to identify all Koliwadas. I detail this survey process in the previous chapter.

9   The CRZ states: "Koliwada namely, fishing settlement areas as identified in the Development Plan of 1981 or relevant records of the Government of Maharashtra, shall be mapped and declared as CRZ-III so that any development, including construction and reconstruction of dwelling units within these settlements shall be undertaken in accordance with applicable as per local Town and Country Planning Regulations." (MoEF, 2011)

making new conceptual plans for their villages was also tied up with the revision of the

Development Plan for Greater Mumbai. For the new plan that would come in effect in

2014, the Municipal Corporation of Greater Mumbai had appointed a private firm called

Group SCE to survey existing land use and produce the new DP.[10] During this time, several

prominent NGOs in the city such as UDRI and YUVA, and even private architectural firms,

began holding public meetings, rallies, exhibitions, and awareness campaigns to encourage

community participation in this new Development Plan. In the words of Deepali Mody, the

director of the UDRI, the idea behind initiating a public movement was to make a plan that

had a "better chance of being equitable and responding to the needs of a larger cross-section

of Mumbai."[11]

For the fishing community, since the DP was a document they could use to prove

their status as a "traditional fishing village," its revision was a critical event. The future of

these *koliwadas* (and their development potential) depended on how they were mapped and

demarcated in this new plan.[12] Consequently, the fishing communities in the city had a great

deal of interest in the public participatory processes and in the alternate visions produced by

these various organizations. It is important to note that both the revision of the DP and the

making of conceptual plans for the fishing villages were not just two disparate events that

just happened to occur at the same time. Indeed, as I later found out during my fieldwork in

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10   The MCGM had hired Group SCE on a contractual basis to produce the plan, and their relationship
was not always smooth and fraught with delays, sometimes as a result of conflicts happening elsewhere. See
Mhaske. Pandurang. *French firm delays city plan, seeks to back out.* DNA India. 12 April, 2011.
http://www.dnaindia.com/mumbai/report-french-firm-delays-city-plan-seeks-to-back-out-1530937
11   Mody, Deepali. *A plan for, of, and by the people.* In Mumbaidp24seven. October 3, 2012.
http://mumbaidp24seven.wordpress.com/2012/10/03/a-plan-for-of-and-by-the-people-2/
12   This itself has been a rather contentious process. In the surveys that were undertaken for the revision
of the DP, many Koliwadas remained unmapped. See: Baliga, Linah. *Civic body has flawed land use plan for
Koliwadas.* Times of India. January 15, 2013. Last accessed: 24 March 2015.
http://articles.timesofindia.indiatimes.com/2013-01-15/mumbai/36352132_1_koliwadas-survey-maps-elu-
survey

Malwani village, one of main reasons for making the conceptual plans was because the DP was being revised. In some ways this studio exercise can even be thought of as a part of the larger movement towards participatory practices centered on an event such as the revision of the DP. However, both the studio exercise and the participatory movement for revising the DP were taking place in an entirely unofficial capacity. The exercise of drawing these conceptual plans for the villages was from the very outset, a classroom exercise. Similarly, the public movement to participate in the making if the new DP too was entirely unofficial. Or as Mody said, the Municipal Corporation was not "bound" accept any suggestions:

"The Institute, in initiating this public participatory process, believes that the plan has a better chance of being equitable and responding to the needs of a larger cross-section of Mumbai. While the municipal corporation is not bound to accept any of the Institute's suggestions, these will be available as a resource that the whole city can draw upon. Also, the process of involving various groups will spread awareness among citizens of the need for them to also take the initiative in engaging in the planning process and reaching out to civic authorities either directly or through organizations such as the Institute."

Thus, what complicates both these participatory efforts is that neither of them carry any "official" force or sanction from the state. They are both "informal" participatory exercises conducted by teaching, research, or community institutions, and the resulting plans, maps, or drawings are simply regarded as "possibilities" or "suggestions" that the Municipal Corporation may entire reject. In such a scenario, what kind of force do these plans acquire? How do these "unofficial" projections allow communities to make political claims on the city's landscape?

Both the studio exercise and the public participation in the DP's revision come out of a broad shift towards neo-liberal planning policies, especially in the case of low income housing and slum redevelopment projects. In such cases, large communities of people from informal urban settlements such as slums have entered into agreements with private developers to secure apartment housing. However, apart from introducing profit driven private partnerships, this shift has also led to the development of a hybrid, collaborative

design practice and pedagogy that brings community groups in dialogue with architecture colleges, NGOs, and research organizations to produce plan proposals and design ideas that meet the needs of low income communities, such as those living in fishing villages and slums. Interestingly enough, though the CRZ pitted "slums" against "fishing villages" in terms of distributing development potential, which led to tensions between different communities that inhabit informal settlements, the participatory exercises that fisher communities initiated with architecture schools are deeply rooted in the planning, construction, and housing design cultures that emerged from the long history of slum rehabilitation in the city.

In 1995, the state government of Maharashtra, India, deregulated its slum rehabilitation policy. It established the Slum Rehabilitation Authority (SRA), which would provide the legal framework for rehabilitation, but process itself would be undertaken through partnerships between slum dwellers and private developers who would receive development incentive. This landmark reform radically affected the lives of 7 million slum dwellers living in the state capital of Mumbai. In doing so, the state promoted the enterprise as one that would give slum dwellers greater control over the construction, design, and location of the new homes or "rehabilitation schemes" to which they were displaced. However, years following the institution of the SRA saw a sharp rise in demolition drives – over 90,000 homes were demolished in 2004-5 alone.[13] Therefore, the only way in which slum dwellers could claim housing, security, and recognition as rights-bearing residents of the city was through their "voluntary participation" in these violent relocation processes.

The policy of demolishing settlements and relocating them to subsidized mass housing schemes was established based on programs underway in the United States in the

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13   Nijman, J. 2008. Against the odds: Slum rehabilitation in neoliberal Mumbai. *Cities*, *25*(2), 73-85.

1950's.[14] The policy in its present form follows this strategy, but like rehabilitation policies in many other countries it has been changed into a process characterized by private partnerships that bring slum dwellers together with builders, municipal bodies, NGOs, and planners The state authorities of Maharashtra cast slums and all other forms of informal housing as illegal, unsanitary, and environmentally harmful zones that warrant active urban interventions.By moving slum dwellers to apartment based schemes, state interventions claimed to provide them with better living conditions, access to domestic infrastructure, and legalized housing while ensuring better environmental conditions in the city and protecting the rights of its taxpaying residents. I give this short introduction to the SRA as a way of illustrating the material and concrete nature of the anxieties that the CRZ housing reforms posed if settlements were indeed labeled as slums.

In his detailed account of the history and working of the SRA, Vinit Mukhija writes that this framework of "enabling" slum communities has been promoted as consisting of "decentralization, privatization, deregulation and demand-driven development." [15] Restructuring the slum rehabilitation process as a public-private partnership resulted in new institutional relations between slum communities and other parastatal agencies, who at first stepped in with the intention of organizing citizens' co-operatives in slums and as advocates for slum dwellers' rights in the rehabilitation process. Mukhija and Sanyal describe this "institutional pluralism" where "multiple institutions ranging from private firms to community groups, faith based organizations to political parties, governmental institutions to non-governmental organizations, could operate freely pursuing varying strategies to reach

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14   Weinstein, L., & Ren, X. (2009). The changing right to the city: urban renewal and housing rights in globalizing Shanghai and Mumbai. *City & Community*, *8*(4), 407-432.

15   Mukhija, Vinit. 2001. "Enabling Slum Redevelopment in Mumbai: Policy Paradox in Practice." *Housing Studies* 16 (6): 791–806. Mukhija's main argument ehre is that decentralization need not necessarily involve less state involvement, but rather, a redistribution of the state.

the urban poor. Institutional pluralism was considered a prerequisite for not merely housing provisions but to attain the broader objective of "democratization" which too had emerged as a key theme in the 1980s' development discourse."[16]

Apart from the new institutional frameworks, the SRA also made room for new "participatory" design practices to emerge.[17] For instance, the Society for the Promotion of Area Resource Centers (SPARC), an NGO working on slum dwellers' right to housing grew to prominence in its role as a mediator between slum co-operatives and private developers. SPARC was not only involved in helping communities secure housing, but took a great interest in the resulting "built form." SPARC and its housing advocates called for rethinking the standard apartment "type" based on the argument that it did not fit the needs of families who lived in slums and operated informal industries from the space of their homes.[18] For example, Colin McFarlane provides an account of "community designed" public toilets, a project where NGOs such as SPARC worked in close alliance with the residents of the settlement. McFarlane argues that such new design practices not only allowed for new spatial imaginations, they also made the space for "non-technical" ways of engaging architecture and construction, which circulated in a wide public domain:

"Exhibitions of model houses and toilet blocks have become critical events in the Alliance's[19] work. They involve full-size model houses that are designed and built by organizations of the poor. Exhibitions are an attempt to illustrate the potential of the poor and to attract media and political attention. Often, they are associated with exchanges of poor people from across the city or country, and they generally last three or four days. They are characterized by informal discussions ranging from concerns over land tenure to construction to

16   Sanyal, Bishwapriya, and Vinit Mukhija. 2001. "Institutional Pluralism and Housing Delivery: A Case of Unforeseen Conflicts in Mumbai, India." *World Development* 29 (12): 2043–57.

17   Perhaps it is not fair to say that these practices were "new," as participatory planning has a long history. However, it might be better to say that policies such as the SRA helped promote and reinvent these practices. They are also tied up with flows of capital – for instance, it became more common that World Bank funding programs began to institute community participation as a part of its funding aims. Thus, these practices are coupled with economic incentives.

18   Appadurai, Arjun. 2001. "Deep Democracy: Urban Governmentality and the Horizon of Politics." *Environment and Urbanization* 13 (2): 23–43.

19   The group of NGOs McFarlane writes about, this includes SPARC.

local organizing. Occasionally, exhibitions are combined with other events such as enumerations. Model houses draw on the knowledge of the poor for the purposes of housing construction. For instance, rather than focusing on conventional measurements, they stress non-technical knowledges. At the level of the individual house, construction techniques draw on the geographical imaginations of the poor."[20]

McFarlane's account describes the way in which slum communities reworked "technical" knowledge, or how "non-technical" knowledge gets mixed up with the "technical." In doing so, it also in some ways reiterates an oft-heard claim about participatory planning – that such planning strategies often run counter to the technical and visual language of standard architectural and construction plans and that communities find creative ways of bringing their own everyday knowledge to the practice of design. In McFarlane's example this manifests as creating a 1:1, or full size models of the toilet to be built. However, another important aspect of the particular participatory planning and design culture that emerged from the SRA was the way in which expert knowledge was taken up by these communities (or how communities worked with this language), often through the participation of architects and planners, in order to gain housing or infrastructure. These practices too are written about as "resisting" the planning apparatus through "counter-mapping."[21] One of the main sites where many such participatory planning and design projects have been conducted since the late 1990s is Dharavi, a large informal settlement with an estimated population of 700,000 to one million residents.[22] Indeed, KRVIA, the architecture school I write about in the beginning of this chapter, played a critical role in developing conceptual urban plans and designs for Dharavi in close alliance with SPARC. These participatory design initiatives are often written about as a "reinvigoration" or an "ethical renewal of the

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20   McFarlane, Colin. 2004. "Geographical Imaginations and Spaces of Political Engagement: Examples from the Indian Alliance." *Antipode* 36 (5): 890–916.
21   Peluso, Nancy Lee. 1995. "Whose Woods Are These? Counter-Mapping Forest Territories in Kalimantan, Indonesia." *Antipode* 27 (4): 383–406.
22   Sharma, Kalpana. 2000. *Rediscovering Dharavi: Stories From Asia's Largest Slum*. New Delhi; New York: Penguin. Note: this population estimate is rather outdated and recent information suggests that this population has declined.

disciplines of architecture and urban design"[23] where networks of architects, planners, community members and citizens' advocates aim to critically intervene in the city's transformation process. It also set the ground for a widespread design practice where communities work with plans, models, and maps as a means of reimagining their neighborhoods. Perhaps the best example of such "creative" collaboration is the "Dharavi Biennale" organized by SNEHA (Society for Nutrition, Education, and Health Action). The art festival included more than 400 artists and four gallery spaces organized inside Dharavi. The main idea behind this massive effort was to not only rearticulate Dharavi as a site of creative production, but also as a means of campaigning for the slum residents' rights to infrastructure and housing. Maps and plans are central features of these initiatives, either cataloguing the experience or a means of articulating urban desires (Fig. 79).

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23   Boanoi, Camillo. 2015. "Conflictive Urbanism in Dharavi: Mega-Projects, Mega-Resistances and the Dialectics of 'right to the City.'" Last Accessed March 26 2015. http://www.n-aerus.net/web/sat/workshops/2009/Rotterdam/pdf/Boano.pdf.
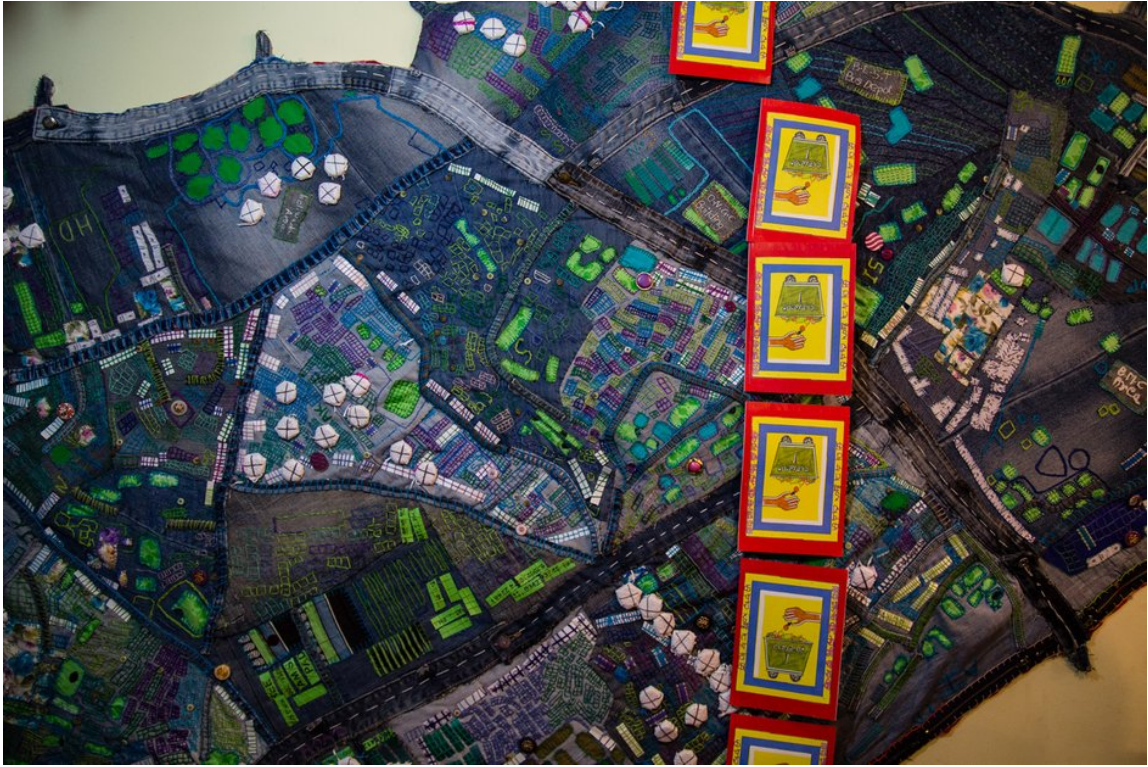
Figure 66: Sewn map made by women artists living in Dharavi cataloguing violent experiences. Source: www.citylab.com.

It is through this hybrid practice that a visual economy centered on the cartographic plan emerges, which then becomes the means of claiming rights to space. I follow the process of making such a participatory plan through an ethnographic account of the design studio in these fishing villages. However, as my ethnographic work shows, these communities are clearly invested in working from within the technical language of the state's cartographic drawings, I argue that, for the fishing communities, the very *creation* of the plan imparts the potential to make specific claims to infrastructure, housing rights, and amenities. It also becomes a means protecting themselves from private developers, in spite of the knowledge that the Municipal Corporation may not accept a conceptual plan. It becomes a means of establishing (or at least showing the possibility of establishing) a consensus within each village and between fishing villages located in different parts of the city. This suggests

that these plans aren't merely confined to the space of an architectural studio. Rather, they are deeply enmeshed in the broader context of planning, participation, and spatial politics of the city and the CRZ. While public participation around the DP is based on ideas of equality, democracy, transparency, and on an unfettered and free access to information, the ethnographic encounters in the fishing villages expose the contradictions, tensions, and opacities that are inherent in the process of participation. At the same time the making of the plan (even one that may not be realized) becomes critical in the process of claiming what Lefebvre has called the "right to the city." Such a right, Lefebvre writes, is not one that is automatically given (such as perhaps nationality), but rather one that must be "claimed," or is earned through everyday practices of inhabiting space. He argues that the right to the city:

"…should modify, concretize and make more practical the rights of the citizen as an urban dweller (citadin) and user of multiple services. It would affirm, on the one hand, the right of users to make known their ideas on the space and time of their activities in the urban area; it would also cover the right to the use of the center, a privileged place, instead of being dispersed and stuck into ghettos (for workers, immigrants, the 'marginal' and even for the 'privileged')"[24]

Following Lefebvre, David Harvey argues that the right to the city has "undergone a certain revival"[25] and re-appears through neoliberal planning policies and reforms in different ways, especially through the rhetoric of participation. This idea of participation, Harvey writes, allows residents to take part in civic processes in new ways. In the context of urban planning and zoning in Mumbai, this engagement or participation emerges through new networks and alliances between planners and residents. Though, as my examples in the following sections show, these participatory modes should not be imagined as equalizing or transparent.

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24   Lefebvre, Henri. 1996. *Writings on Cities*. Edited by Eleonore Kofman and Elizabeth Lebas. 1 Cambridge, Mass, USA: Wiley-Blackwell. Pg. 34.
25   Harvey, David. 2013. Rebel Cities: From the Right to the City to the Urban Revolution. Verso.

Public participation and the Revised Development Plan

One of the most important campaigns in the run up to the revision of the DP was the "Open Mumbai" project launched in March 2012 by the office of P.K. Das, a prominent urban planner and architect. This project proposal reordered the fabric of the city based on the idea of "restoring" open spaces in order to provide its citizens a "better quality of life," "health" and "dignity." The project was exhibited in the prestigious National Gallery of Modern Art and inaugurated by the Chief Minister of Maharashtra. It was also sponsored by the Times of India group, and advertised prominently in its English language dailies.

One ad featured a picture of a smog-covered suburb. In the photograph, a long line of vehicles snaked northwards on the Western Express highway. The image seemed to convey that the smoke from this line had made its way, unnoticed, into the suburbs. The accompanying text amplified this claim in big bold letters: "Mumbai needs an oxygen mask." The ad's body text conveyed the city as a creature waging a losing battle against pollution, over population, and vehicular emission. In another ad, that featured a patch of hyper saturated, bright green grass, it was the people of the city and the gardens who were facing a bleak future. It bemoaned the fate of the city's gardens lost among the labyrinthine network of slums, or taken over by "druggies and lovers," and covered in heaps of waste.

Figure 67: Times of India & Economic Times - March 2012, Ad campaign for the "Open Mumbai" project.

The summary text at the exhibition described the Open Mumbai Project as a significant "social, cultural, and political act." In the words plastered on the wall, the project was an attempt to rethink the fabric of the city, to try and plan it based on a "system of

public spaces with equal access to all," as planning, urban design and architecture were "fantastic democratic tools for influencing social change." In this context then, the exhibition itself, taking place within the space of a prestigious national gallery, was pitted as the first of a series of dialogues on planning that invited citizens to re-imagine the green and open city of the future by rescuing it from slums, waste, druggies, and lovers.

I was waiting for Mr. Daya Koli, the head of the fishing community at Malwani Koliwada, at the entrance of the exhibition. He had called me the night before and said that many people from different fishing villages would be going to the exhibition on the following day and that I should join them. Apparently word had got out that in the maps displayed in the exhibition, several fishing villages had been demarcated as slums. According to the information Daya Koli had, the fishing community was anxious as P.K. Das's project envisioned a massive redevelopment of the city's coast and several projects within it were proposed along stretches used by fishers.[26] Moreover, since the fishers' rights to land depended on their ability to prove that the settlements they lived in were indeed "fishing villages," the label "slum," on a project as public as this posed a direct threat to their claims. As mentioned previously, under the new CRZ only those settlements that could prove that they were "traditional fishing villages" by means of documents such as the city's DP could gain the right to develop their land. In the event that a settlement could not prove itself to be a "Koliwada," it opened the possibility of being classified as a slum. This would open the settlement to pressure from private developers, and in the face of such pressure residents from a settlement might have no choice but to register themselves as slum dwellers and be forced to move into slum rehabilitation schemes. This would mean living with bare

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26 Following scholars such as Ajantha Subramanian, I use the gender neutral term "fishers" when referring to this community as a collective. See: Subramanian, Ajantha. 2009. *Shorelines: Space and Rights in South India*. Stanford, Calif: Stanford University Press.

minimum infrastructure, in apartments considerably smaller than their current homes.[27] Moreover, the possibility of being marked in some ways as a "slum" also ran against the grain of the Koli community's sense of identity as the "original" or the "native" inhabitants of Mumbai, which was one of the central points on which their claims were formed.[28]

As I stood at the entrance, Mr. Rupesh, the village representative from Moragaon, spotted me. For many years, Mr. Rupesh had championed the cause of the "traditional" Koli community, and had filed several cases in court against different state organizations and real estate developers. From my interactions with him, it was evident that he had spent a lot of time researching land rights and the development by-laws. In addition, he had collected a vast digital archive of documents, petitions, articles, building plans, and maps and photographs that he would show during different public meetings. On the first floor of the exhibition was a set of maps that showed the existing condition of the city. Each map was a satellite image taken from Google, an aerial view of Mumbai composed predominantly in muted shades of blue, green, grey, and brown. On to this image, the author(s) had shaded over different parts to indicate land-use in different areas (Fig. 81).

"Is this through the government or what?" Mr. Rupesh asked. His back was to me and he was facing a large map of the city on which the planner had marked all the slum areas in bright red. In his hand he held a camcorder that was pointed at the map and his eyes were on the viewfinder, which was zoomed into a detail; I heard the camcorder

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27   There are many detailed studies on the Slum Rehabilitation Schemes in Mumbai. For detailed history and case studies, see: Mukhija, V. 2003. *Squatters as Developers? Slum Redevelopment in Mumbai.* Ashgate Publishing Limited; Weinstein, Liza and Xuefei Ren. 2008. Mumbai's Development Mafias: Globalization, Organized Crime and Land Development. *International Journal of Urban and Regional Research* 32(1): 22–39; Nijman, Jan. 2008. Against the Odds: Slum Rehabilitation in Neoliberal Mumbai. Cities 25(2): 73–85.

28   I follow this more fully in the next chapter where I look at how fishing communities use images of "native" fishermen and women as a means of marking the space of the settlement as a village, and as a means of recuperating their identity as the "original" inhabitants of the city. This chapter also looks at how such a claim is folded into the regional right-wing political movement of claiming rights for the "local" Marathi speaking population as opposed to migrants who are labeled as "outsiders."

click. "It is a government initiative." He said, without waiting for my answer. "The chief

minister has inaugurated it. So even if the government has not started it, it will do something

with it…how did they get this data? How did they make these marks?" He asked, obviously

referring to the areas that were denoted as slums.

"What does the DP say about this area? What is the notification for this place?" He

asked me pointing to another red spot on the map. When I answered that I didn't know, he

said, "I am sure this is not right. I was just there last week, this doesn't look right at all." His

fingers hovered over another junction and his nose was inches away from the sheet.

Figure 68: Images from the Open Mumbai project showing the existing land use in the city.

In another part of the exhibition, beyond the entrance, the walls of the gallery were covered with large-scale re-imaginations of public spaces along the city's coast. In this section, the authors had juxtaposed existing conditions and proposed visions side by side. Each project was treated more or less the same way: on one side, they had shown photographs describing the current condition of the urban edge. Right next to it were "examples" of public spaces from across the world, and right next to that were images of how that space could be changed based on the international examples (Fig. 82). At the center of each example was a map that traced the city's coastline and the proposed vision was juxtaposed on to this map. On the one hand the projects charted the projects made by the architectural firm over time, and on the other, each project described a present and a future scenario. They were brought together in the map of the city's coast, which was presented in fragments scattered in each sub-project.

Figure 69: Proposal for developing a park on Malad creek, Open Mumbai Project. "International Examples" are shown on the right.

"So, they will bring back mangroves where there are none?" Mr. Rupesh asked, looking at a project that proposed setting up a new green zone along Malad Creek. His camcorder zoomed and clicked again. He then stepped back and moving closer to me he said in a low voice, "I think this will be useful for us. There are some ideas (in these maps)... we can use them...we are making maps ourselves. But I have to think how these maps can be of use to us. Are they available online?"

We slowly made our way through every project, and ended up at the entrance where the organizers were selling copies of the maps and books that described different projects. Daya Koli hurried to buy one, but when we got there he realized that he was not carrying enough money. I then added, that the images from the project were available online, he could simply download it and keep it on a CD.

"But what if they change it later? If I buy it now then we can show what was there in the exhibition, then they cannot change it later when we go speak to them. And if I take a print out anyone can say that I made it up or it is wrong."

As we bought the maps and documents; Daya Koli carefully pocketed the receipt. We exited the building and walked over to a tea stall on the road. There, standing in a circle sipping tea, the men began a vociferous debate about the Open Mumbai project and its capacity to affect the lives of fishing communities who lived along the coast. The debate was about whether a "proposal" or a "conceptual" work could be regarded as merely a "possible scenario" or idea with no trace of a threat.

Mr. Vaity, a senior member of the fisher co-operative at Malwani interjected, saying, "It doesn't look like an idea. Everyone has ideas... but to put it on a map and show how to do it, that is another thing. Now there is this exhibition. Everyone has seen it. It is in the

newspaper. So if some developer or corporator[29] sees it, anything could happen. They might just use it -- the maps and plans are already there… and if the demarcated area has not been shown properly, then who is going to stop and check? No one will come to check or to ask people. They will take over the land in the name of beautification and make a garden. This has happened to our community several times. So I don't think that this can just be called an idea. They are trying to build the project proposed in Bandra. The people from Chimbai Fishing village were never asked about it. They made their boat stand into a park! And now the municipality might pass the project because rich people like the project! It gives them a nice view from the apartment, how do they care about fishing boats? One cannot predict when something goes from an idea to an actual project. If someone sees a beautiful bridge in the mangroves when they go on their international holiday, they will think, lets build a bridge in the mangroves in Mumbai! It can happen at any time."

Later, at a public meeting of the Open Mumbai project, the fishermen got an opportunity to put their questions to P. K. Das directly. While I was not present for this meeting, I was told that Das reiterated the disclaimer that he had pasted on all his maps – that since the project relied on Google Earth, was impossible to make a distinction between the different kinds of informal settlements, and that, keeping in the spirit of participatory planning such details would be attended to if these projects were ever taken up, and the plan would be revised in consultation with affected communities.

The first master plan document for Mumbai, *"An Outline Master Plan for Greater Mumbai,"* was prepared by Albert Mayer and N.V. Modak and released in 1948. The Modak Mayer plan, as it came to be known, had no official status and neither did the Municipal Corporation adopt it in any official capacity. Yet, it was an important influence as its

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29 A corporator is an elected municipal official.

suggestions show up in a number of municipal projects and in many of its subsequent plans.[30] The first official plan for the city was proposed in 1964 (and released after a three year delay), nearly two decades after the Modak Mayer plan was released. This *"Development Plan for Greater Bombay"* entailed large scale restructuring of the city "with the help of zoning, population dispersal to the suburbs, decentralization of industry and commerce."[31] The second development plan was prepared in 1981 was delayed for more than a decade, as the Municipal Corporation only released it in 1994. Apart from these delays, several planners have commented on the "partial" or "faulty" implementation of the city's plans.[32] Thus, given the delays and flaws in approving and implementing the first two plans, the public interest and the sense of urgency that surrounded the revision of the third plan might on the surface appear unexpected or even strange.

The reasons for this heightened public interest lie in the many shifts that took place in the two decades since the last Development Plan. The first of these shifts was that in the late 1990s the Maharashtra government implemented a series of policies decentralizing planning and construction processes, such as the Slum Rehabilitation Act of 1995. This allowed the construction of large-scale re-housing complexes through "private partnerships" between slum communities, NGOs, and real estate developers. The second important development was the instantiation of ward committees and "Advance Locality Management" that redistributed the power to make decisions about everyday civic life to ward committees

30 Dwivedi, Sharada, Mehrotra, Rahul, Mulla-Feroze, Umaima. 1995. *Bombay: The Cities within*. Bombay: India Book House.
Dossal, Mariam. 2005. A Master Plan for the City: Looking at the Past. *Economic and Political Weekly* 40(36): 3897–3900.
31 Shaw, Annapurna. 2004. *The Making of Navi Mumbai*. Orient Blackswan.
32 Nallathiga, Ramakrishna. 2009. From Master Plan to Vision Plan: The Changing Role of Plans and Plan Making in City Development (with Reference to Mumbai*). Theoretical and Empirical Researches in Urban Management* 4(4 (13)): 141–157.
Phatak, Vidyadhar K., and Shirish B. Patel. 2005. Would Decentralization Have Made a Difference? *Economic and Political Weekly* 40(36): 3902–3905.

that would operate at the neighborhood level.[33] Third was the introduction of e-governance initiatives at the Municipal and ward level, with the intention of restructuring the relation between different stakeholders such as the citizens, politicians, and public servants.[34] Ideas like increasing accountability, transparency, reducing corruption, resolving poverty and inequality, and the free flow of information between government and citizens underlie all these initiatives. As Mazarella writes, these technological initiatives were promoted as the means of solving pressing issues like urban poverty by "by bridging the "digital divide" between the wired and the unwired, between global cities and information slums. Like so many millennial ideas, it brought together the most humdrum practical objectives with the most sweeping claims about the global future."[35]

Coinciding with these shifts was the rising population of the city, crumbling state of its infrastructure, the initiation of several large scale infrastructure projects that displaced thousands of people, and events like the 2005 Maharashtra floods that put a lot of pressure on particular communities like those living in informal housing. Consequently, public participation, access to technology, and open governance were upheld as the way forward in this time of urban "crisis." In Mumbai, particularly after the 2005 floods which were seen as the direct outcome of a failed Municipality, planners and urban activists suggested a critical revision of the Development Plan as a means of addressing the city's infrastructural woes

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33   For a detailed study see: Shetye, Chandana. 2006. Functioning of Ward Committees in Maharashtra: A Case Study. In Sivaramakrishnan, K. C. *People's Participation in Urban Governance: A Comparative Study of the Working of Wards Committees in Karnataka, Kerala, Maharashtra and West Bengal.* Concept Publishing Company.
34   Haque, M. S. 2002. E-governance in India: its impacts on relations among citizens, politicians and public servants. *International Review of Administrative Sciences, 68*(2), 231-250.
35   Mazzarella, W. 2010. Beautiful balloon: The digital divide and the charisma of new media in India. *American Ethnologist, 37*(4), 783-804.

and as a means of addressing the problems of those who were at risk – people in informal settlements.[36]

As the ethnographic encounter at the beginning of this section shows, while transparency and the free flow of information may be ideas that guide such initiatives like the Open Mumbai project, these open and participatory initiatives are not without their inherent tensions and problems. As Mr. Vaity's words suggest, the Open Mumbai project directly pits groups like the fishermen in opposition to middle class citizens who might have completely different "visions" for the city's shoreline as a space for recreation rather than as a space for work. It is in projects like these that conflicting urban desires collide. As this encounter also shows, while information in the form of images and maps is set up to move freely, it also tends to accumulate and congeal in different ways, given the nature of the document, file or image that contains this information.

In his ethnographic work on cadastral surveys and data in Paraguay, Kregg Hetherington writes about the ways in which the idea of "access to information" allowed development experts to "democratic ideals while exerting increasing control over rural politics." He argues that while this idea of free moving information is described as having a great sense of promise in development circles, this idea completely overlooks the forms, documents, and artifacts which contain that information. Inherent to the form of the cartographic survey, the cadaster, the revenue map – as sheets, rolls, digital files – are

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36   Bhagat, R. B., Guha, M., & Chattopadhyay, A. 2006. Mumbai after 26/7 Deluge: Issues and concerns in urban planning. *Population and Environment*, *27*(4), 337-349.
Stecko, S., & Barber, N. 2007. Exposing vulnerabilities: Monsoon floods in Mumbai, India. *Unpublished case study prepared for Global Report on Human Settlements*.
Gandy, M. (2008). Landscapes of disaster: water, modernity, and urban fragmentation in Mumbai. *Environment and planning. A*, *40*(1), 108.

characteristics by which this information remains trapped, or can be disputed, or is simply missing. As Hetherington writes:

"For people who manage cadastres, information lies in the relationship between some sort of inscription and some identifiable section of land, between a title and a property, or between a geo-referenced polygon and a piece of territory. One effect of this on the way bureaucrats speak is that it is often difficult to tell whether or not one has information. As one tireless reformer explained, with evident difficulty, "we have information that we don't know we have. That is, we know we have it, but we don't know if it's valid. There's no certainty. Sometimes we don't even know if it exists. It could be that it doesn't exist. There are so many ways that you can have a land title and it's only paper, because the land doesn't exist." The difference here between "only paper" and "information" is clear – it lies in the validity of a representational relationship between the paper and something else. But it's not just the intangibility of the relationship that causes problems."[37]

Scholars such as Hetherington and Matthew Hull push us to distinguish between "information" and the material artifacts on which this "data" appears, and to pay close attention to the values and forces attributed to documents as a result of the marks, signatures, stamps upon it, or their material conditions, or even their availability.[38] As I later found out, both Daya Koli and Rupesh engage in different ways of building an archive of "relevant" documents. Often these archives are very loosely held; they may be a set of sheets in the fishing co-operative's office, or even a file or a set of loose sheets kept inside someone's house, or as is increasingly the case, random files stored in a computer with no apparent order. The boundaries of the archive – what can be collected and what is deemed relevant – are also blurred. For instance both Daya Koli and Rupesh collect all kinds of plans including ones that are publicly available, or ones that may not even be relevant to their case. I suggest that while these acts of collecting may perhaps appear "random," they are conducted with the sense that any document may carry the potential of becoming important at a later date, or the possibility that some detail in a document might gain relevance or may

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37   Hetherington, Kregg. 2012. "Promising Information: Democracy, Development, and the Remapping of Latin America." *Economy and Society* 41 (2): 127–50. Pg. 132.

38   Hull, Matthew S. 2015. *Government of Paper*. University of California Press.

be advantageous to that particular village. In such a scenario, it is not only important to collect a copy of the plan, but also to ensure that the copy carries the right resolution, marks, and relevant details, which is perhaps why receipts and color copies are as carefully collected and preserved as are the maps and plans. As Mr. Vaity's words also suggest, the fact that these are *plans* also has a profound effect on the manner in which these images are read, gain value, and the ways in which they come to circulate. As plans, they carry a certain concrete possibility of being filed, registered, or the immediacy of being "undertaken" as an enterprise. Moreover, plans are documents that are notoriously difficult to obtain from government archives. As a result, they come to occupy a special place within this archive and are of great significance to claiming rights.

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Making "Conceptual Plans"

It became clear quite early in the planning stages of the architectural studio for making conceptual plans, that the students in the class would have to be split into two groups that would each take one Koliwada as its design site since the villages were located quite far apart from each other. Moragaon Koliwada was located right off the main beach in the rich western suburb of Juhu, where as Malwani was located further to the north in Malad west suburb. During our preliminary visits to the Koliwadas, it was also clear that both the settlements were very different. Moragaon was much smaller in terms of population and had a dense residential fabric. The two Koliwadas also had a different history and entirely different socio-economic make up. For example: According to the Maharashtra fisheries department, in the year 2010-11, there were 100 registered boats at the Malwani landing site

(90 mechanised and 10 non-mechanised), compared to a total of eight registered boats at the Juhu landing site. Thus, Malwani had a much higher number of people directly engaged in the fishing industry as compared to Moragaon.

Each of the villages was also facing different kinds of tensions and land pressures. In Malwani, several landowners were choosing to sell of parts of land surrounding the main residential area to private developers who would build high-rise apartment houses. In Moragaon, one section of the village had formed a co-operative housing society, and under the Slum Rehabilitation Act of 1995, entered into an agreement with a builder. Moreover, the municipality had conducted demolition drives in Moragaon at different times. As a result, many of the older residents of the village who lived in considerably large houses, faced the unwelcome prospect of having to relocate to a slum rehabilitation scheme.[39] In Malwani, however, the threat was articulated as the piecemeal disappearance of "village" land, that was as one resident stressed, "happening in an unplanned manner as a result of landowners making private deals with developers."

It was decided that the studio would run from July 2011 to April 2012, across two semesters. The first few months would be spent in "data collection," which meant gathering surveys, government documents, and historical information that would provide the students with "base information" which they would use to produce their designs. The goal of the first part of this exercise was to produce a document that would show this data in terms of charts and base plans. The main component of the participatory planning exercise would be a

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39   In a detailed study of housing typology in Mumbai, a house in a fishing village is described thus: "A typical house in such a settlement consists of a large multifunctional living space, several small rooms, a tiny kitchen and a toilet. The verandah outside the house becomes a very important element. It is used for various purposes. Tools of fishing are stored along one side of the veranda. Small rooms are added to this house after every marriage as the family grows. While older houses are typically ground storied with sloping tiled roofs and wooden columns, newer houses are two to three storied, flat roofed, built in RCC construction. See: Collective Research Initiatives Trust. 2007. *Study of Housing Typologies in Mumbai.*
http://critmumbai.files.wordpress.com/2011/10/house-types-in-mumbai-final.pdf

"Winter Workshop" where the students would spend ten days at their respective sites, in conversation with residents. From both KRIVIA and TISS's point of view, such a protracted engagement between the students and the community was necessary because the main goal of the exercise was to teach the students the values of involving the community in the planning process. The main teaching point here was that in order to make a "good" master plan, one could not plan at a "distance," but rather, one had to get to know people's needs and priorities in order to intervene in a sustainable and sensitive manner. While the colleges preferred a protracted and open-ended engagement, the village representatives were however, keen on getting them to make a "master plan." This was clear from the many notices they had put up in the two Koliwadas announcing surveys and mapping exercises during the different stages of the studio (Fig 83).[40] Each of these notices announced that the college students would be staying in the village in order to make a "development plan" for the Koliwada.

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40   It was not as though the representatives were unaware of the college's goals and interests in the exercise. During one of the first meetings in the summer, one of the professors from KRIVIA said at the public meeting, "We can only do so much as apart of a studio exercise, because these are students. If you need a working plan, we have to think of making it as a proper project that the college can take on, but that will involve having a formal structure and we would need to be paid. But it is possible to get some ideas started..."

Figure 70: Announcement in the Koliwada, which states that the college students would be making a development plan for the village.

In the first stage of the studio, the students had broken up into groups and conducted surveys in the villages. Based on these, the produced a preliminary report with plan drawings that showed the community makeup, history, building heights, building use, and existing amenities and road networks within the village. Based on a small household survey, they managed to build a broad picture of the socio-economic make up of the village, and this was included in a long descriptive section of the preliminary document.

At different points in the studio, the students and faculty would meet with the community members in an open shed in the middle of the fishing village; an event space that doubled as a drying and net mending area during the day. The first few meetings were well attended. But as the studio wore on, the crowds slowly thinned. It became clear during the very first surveys itself, that there were deep divides between different "factions" in the village – fishermen and non fishermen, Kolis and non-Kolis, Hindu residents and Christian residents, and tenants versus land owners. Not only were a number of residents completely unaware of the project, they also questioned the fishers' right to commission a plan, when

they did not necessarily represent the interests of many members in the settlement who either did not fish, or did not belong to the Koli caste. For instance, one of the residents interviewed by the students said, "On what basis are you saying that he (Daya Koli) is a "village" representative? I do not remember voting for him to be my representative. They (the fishing community) might want to do something for the village, but they have not told us anything. Now you are coming and asking me to list the problems I have. Why should I talk to you?"

It was clear from the first survey that the active fishermen were only a small part of the village; most were also engaged in other kinds of labor during lean months. Malwani Koliwada was made of several different groups who had lived in the village for different periods of time. For example, the community of Pachkalshis and Christian Kolis who claimed to have inhabited the village for as long as the community of fishermen, did not usually take part in any of the events set up by the fishermen's co-operative. As a result of the complex tenure systems in the village, there were several groups of residents who had completely different stakes in the potential redevelopment project. Moreover, even within the Koli community, each house typically contained several different households, and was occupied by different family members who had laid claim to a share of the ancestral home. These members generally did not fish and instead had jobs in other parts of the city. Several landowners in the village had built additional residences, which they leased to migrant workers looking for cheap housing. Though the students did interview several members of these different communities in the village, these groups never took part in any of the public meetings and expressed their disapproval and suspicion of the "participatory" process initiated by the members of the fishermen's co-operative. By the time the winter workshop started, the only people attending the public meetings were either the members of the

fishermen's co-operative society in the village, their relatives, or members of fishermen's collectives from other villages.

At the meeting held in the co-operative society's office space, the faculty from both schools voiced their concerns regarding the "lack of participation" from different community members. Consequently, they tried introducing new strategies in order to increase participation and produce a plan, that as one faculty member said, "actually addresses their (residents') needs, rather than imposing something that we might think of as a lack." This was emphasized as one of the goals of the winter workshop: to get the students to interact with as many residents as possible not just to make a viable plan, but also to ensure that the pedagogical goals of the exercise were also met. By this time members of both communities and other local representatives were anxious that the colleges provide them the final "master plans," and asked the college for these drawings during several meetings. This was not the first time such an anxiety had been expressed either; it had come up several times during the winter workshop. On the colleges' part, such a plan could only be drawn after a rigorous study had been undertaken as the *contents* of such a plan would be critical.

The disparity between what the plan meant to the colleges versus the meanings and values assigned to it fishing community became apparent during the winter workshop. While the schools conducted the workshop as an academic exercise, billboards announced the workshop as a program to make a development plan for the village. This was also evident during the interview sections of the workshop where the residents would emphatically suggest to the students to "put" *everything that was possible* in the plan and in accordance with the Municipal laws. For example as one student noted that it was possible under the current CRZ laws to have bio-gas plant in the fishing village or near the mangroves, the residents

responded by saying, "Then just put it there! Show it there! Then later we can see whether we need it. Just put whatever is possible for now."

I describe this moment not as a way of saying that this was a "failed" or "flawed" participatory exercise, but rather to suggest that they are different readings and potentials that are ascribed to a plan. In this sense I draw from the works of other scholars who have studied participatory initiatives to say that there are different ways in which urban planning discourses and planning practices might intersect with the public reading of these practices.[41] For the residents of Malwani village, the purpose of this participatory exercise was *the creation of a plan.* The point of the plan was to maximize their potential to claim rights and amenities under the current CRZ and municipal laws. For instance, the point of putting in a hospital, or a bio-gas plant, was not that they desired these amenities, but rather that showing these amenities on a plan would the possibility of proposing public amenities at a later date. For the residents, the making of a plan had a lot to do with strategic positioning in terms of their own community and in terms of their relation to other villages.

For the architecture school, the "conceptual plan" was centrally about a critique of "top down" planning methods. This critique and mode of conducting studio exercises also comes out of the shift towards decentralized planning practices that took place in the late 1990s. Besides making place for partnerships between real estate agents and community members, the move towards decentralized planning practices made space for a new kind of academic practice in Mumbai that was based on interactions between residents and architecture schools or research institutes. During the last decade organizations such as the Partners for Urban Knowledge, Action & Research (PUKAR), UDRI, and institutions like

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41   Mosse, D. 2003. The making and marketing of participatory development. In *A moral critique of development: In search of global responsibilities,* 43-75.

KRVIA began undertaking workshops and publishing research projects that proposed a model of working in the city, and of thinking about the urban landscape as a site of work. Thus, there was a great deal invested in the making of a plan and its contents and in the pedagogical position of the colleges. This difference – how the community read the plan versus the schools – was most apparent at the time when the plan had been printed and given to the villages. Copies of the studio exercise, its surveys, drawings detailing existing land-use and history, street sections, and a "conceptual plan," were made into one document and sent to the representatives. The conceptual plan was put at the very end of the document, which I took to be a symbolic way of suggesting that the process of intervening in the urban fabric was through a nuanced understanding of a community's needs. During one office meeting in Malwani Koliwada, a member of the co-operative was thumbing through the document. He asked one of the other members to help him find the plan. When they found it at the very end, they immediately suggested separating it from the rest of the document to make copies of the plan in order to show it to municipal corporators. As one of the members looked at the plan, he said, "Once the corporator sees the plan, he will realize we also know what is possible... that it is possible to build these things here. This is apparent once you see the plan."

While the point of the participatory exercise for the colleges was a "slow reading" of the plan, a reading which would allow the viewer to understand the complexities at stake in the act of building or intervening in the fishing villages, the exact opposite kind of reading was at stake in for the Koli community. For them, the plan was functioned as an image that a corporator, builder, or perhaps a representative from another village could grasp in a glance. It also functioned as an image that would immediately place the community in an advantageous position in their struggle for housing. Yet, both these ways of looking at a plan

come out of the same historical context and political shifts, and their intersection is most apparent in the public movement demanding participation in the production of the city's new Development Plan.

As stated previously, in the case of Mumbai's Development Plan, the most remarkable show of this move towards participation in planning was the release of the *"People's Vision Document for Mumbai's Development Plan (2014-34)."* [42] This document lists more than 80 organizations as contributors, and as Indorewala and Wagh describe in their post, marks an "unusual convergence" between "urban activists, community groups, rights groups, unions, Non-Governmental Organizations and academics, who have come together to provide a theoretical critique of the city's neoliberal development model, to formulate a more diverse and hopeful vision for the city than the one proclaimed by its power elite, and to present practical alternatives to plans and projects promulgated by faceless state bureaucracies and unaccountable private consultants." [43] This public movement also highlights a new and displaced authorship where the state no longer has sole control over the development process. Instead, this process brings together different collectives and groups that are deeply invested in the making of plans.

In such a scenario, a *cartographic plan,* which represents a view of how urban transformation might manifest in a given area, and is a particular kind of technical document, comes to gain value. For communities like the Kolis, it becomes not just a means of suggesting how their villages might be made better, but also a way maximize their claims to land, amenities, and rights through the act of making a plan. Here, it is worthwhile to

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42   YUVA, UDRI, et. al. 2013. *People's Vision Document for Mumbai's Development Plan (2014-2034).* http://www.yuvaurbanindia.org/data/People%27s%20Vision%20Document_Final.pdf
43   Indorewala, Hussain, Shweta Wagh. 2013. People's Participation in Planning Mumbai? December 17, 2013. http://kafila.org/2013/12/17/peoples-participation-in-planning-mumbai-hussain-indorewala-and-shweta-wagh/

come back to Hetherington and Hull's urging to look at the particular force that documents possess as a result of their form, in this case, the urban plan.

In his essay on map-making, J. Rabasa writes that maps (especially historical maps of the same region) can be thought of as a "geographic palimpsest" where:

"*The transposition of the image of the palimpsest becomes an illuminative metaphor for understanding geography as a series of erasures and overwritings that have transformed the world. The imperfect erasures are, in turn, a source of hope for the reconstitution or reinvention of the world from native points of view"[44]*

Rabasa's idea of a palimpsest evokes the kinds of concrete attachments maps and plans have with the landscape in that they point to things that are there, or that might actually come into existence. Indeed, as Sumathi Ramaswamy writes, the very act of locating something on a map imbues it with a certain veracity and concrete possibility in terms of its existence.[45] The plan also has specific value as a document that may be filed in a government office, or as a document that might be immediately apprehensible, read, and understood by someone such as a municipal officer. In a context that brings citizens in closer communication with civic officials, the plan is a way of speaking in that official language. In this sense, the plan becomes a marker of a potential, of the capacity to project ones urban desire such that they may come into existence, and also to strategically position oneself in order to make those claims through the image of the plan.

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44   Rabasa, J. (1985) Allegories of the Atlas. In F. Barker, ed., Europe and its Other,. 2 vols, Colchester, II, pp. 1-16.
45   Ramaswamy, Sumathi. 2004. *The Lost Land of Lemuria: Fabulous Geographies, Catastrophic Histories*. New Ed edition. Berkeley: University of California Press.

Creek Life

In the early hours of July 31, 2012, which was a Sunday, the inhabitants of Moragaon, a part slum, part Koliwada clinging to the edges of the beach in the posh western suburb of Juhu in Mumbai, were wakened by the looming and ever-nearing presence of a 1000 ton, 77 meter long oil tanker by the name of *MV Pavit*. While the coastguard cast the event as a breach of national security and promised more rigorous marine surveillance patrols,[1] the fisher community had to contend with other, perhaps more concrete threats.[2] Not only were they in the direct line of impact of these vessels (there was a very real possibility that Pavit could keel over and fall on their houses as it moved with the tide),[3] but such events also posed a viable threat to both the local and the wholesale export fishing market. While Pavit had lodged herself on Juhu beach during the monsoon when fishing was banned, this annual ban would close mid-August. There was much worry that the news about the oil leaking from the tanker would affect sales right at the beginning of the new fishing season. Their pessimism was not unfounded as previous events, such as the oil spill caused by the cargo vessel *MSC*

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1   Press Trust of India. DGS to Probe How Oil Tanker Pavit Stayed Undetected. *Outlook India Magazine.* August 02, 2011. http://www.outlookindia.com/news/article/DGS-to-Probe-How-Oil-Tanker-Pavit-Stayed-Undetected/729890. Last accessed on February 18, 2015.
2   There was much speculation that vessels such as Pavit were deliberately stranded in order to save the cost of breaking them down. See:
3   Yerunkar, Chetna. *Help, MV Pavit may fall on our houses!* Mumbai Mid-day. August 3, 2011. http://www.mid-day.com/articles/help-mv-pavit-may-fall-on-our-houses/130211 Last accessed: February 23, 2015.

Chitra in 2010, had resulted in a long market slump and fishing activities had been curtailed till the spill was cleared.[4]

Figure 71: MV Pavit on Juhubeach. Moragaon Koliwada is visible on the bottom left corner.[5]

For communities that depend on fishing as a primary source of income, such events introduce a sharp sense of instability in a livelihood that is already characterized by

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4 Indian Coastguard. 2011. *Blue Waters: Newsletter on Marine Environment Security.* Volume 12 (1). http://www.indiancoastguard.nic.in/Indiancoastguard/NOSDCP/NOSDCP%20Publications_files/blue%20 waters%20Jan%202011.pdf

5 Pictures source: NDTV News Service: http://www.ndtv.com/photos/news/after-wisdom-mt-pavit-runs-aground-at-juhu-beach-11043/slide/6 Last accessed: February 23, 2015.

unpredictability and risk. As I have shown in previous chapters, this unpredictability has just as much to do with a sense of an ever-nearing ecological crisis and Mumbai's land politics as it has to do with the quotidian practice of catching and selling fish. For the fishers, this feeling of instability is amplified as a result of the governmental responses to events like the oil spill or the dangers opened up by a beached tanker. In terms of the CRZ, the state often apprehends these events within the framework of national security and in relation to ecological outcomes of such events. In the broadest sense, this is reflected in the CRZ's commitment to "safeguarding" and "sustainably developing" the country's coastline. As this chapter will show, the matter of maintaining territorial integrity overlaps with the idea of ecological integrity in different, often unexpected ways in the lives of coastal communities who inhabit these boundaries.

In this chapter, I look at how fishers in Mumbai negotiate the ecological visions of the CRZ through both the activity of fishing and through political action, which relies on entering into alliances with architects, developers, and planners. Such a political alliance relies on the visual as a means of conveying the communities' desires to the state, and as a means of being able to speak in the language of the state and developmental politics through the use of the plan drawing. While previous chapters have generally focused on particular plans and mapping projects as a means of talking about the way spatial politics unfolds, in this chapter, I focus more on the conceptual frameworks of these processes. I suggest that there are conceptual parallels between the day-to-day process of catching and selling fish, and political action, as acts that are characterized by the quality of improvisation, taking place within a terrain of ecological, financial, and political risk. This is not to suggest that the ideas of improvisation that underpin work and political action completely overlap, but that they

animate, cross over, and are brought to bear upon horizons of urban aspiration and ecological visions in different ways.

In the first part, I look at how engaging in fishing as a livelihood means having to constantly gather information and improvise in relation to rhythms, cycles, and shifting weather and market conditions. I draw from anthropologies of fishing to look at how different forms of knowledge gathering, improvisation, and experience intersect in catching and selling fish, and the ways in which different temporal horizons associated with the environment, market conditions and experience are brought to bear in the everyday. In the second part, I show how policy interventions like the CRZ that adopt a framework of market environmentalism and a developmental paradigm, introduce new pressures and conditions into this already dynamic field in which the fishers operate. In such a scenario, fisher communities respond through acts of political improvisation that seek to work between the possibilities opened up by this new policy initiative and the shifting horizons and conditions of fishing, the fish market, and housing insecurities. Lastly, I turn to the particular sites – namely creeks, shores, and seas – where the act of drawing boundaries and lines that define the limits of the coastal zone is not so straightforward and bears its own kind of improvisation. I argue that these boundaries are not just sites that resist these cartographic endeavors, but sites that allow different political struggles to emerge from the visual, and evince means of engaging the conflicts and risks posed by the CRZ policy

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Mechanized Fishing and Fish Markets

I conducted my fieldwork in the fishing village of Malwani in the northern suburbs of Mumbai between 2011 and 2012, during which time I worked with a family that operated a

"mechanized" boat with a crew of five people. "Mechanized" is a term used by state officials to describe boats that run on diesel engines (see Fig. 85 A and B).[6] In villages like Malwani, most fishermen operate boats that are retrofitted with diesel engines from a small truck, which are generally used for day-to-day fishing, unlike trawlers, which are much larger vessels with the capacity to remain at sea for longer durations of time. The forms of fishing I describe in this paper are exclusive to the small-scale fishing conducted on these boats.[7] In the fishing season between 2010 and 11, nearly 500,000 tons of fish were caught in the state of Maharashtra. Of this, 143,000 tons of fish were caught along the shores of Mumbai, which accounts for just under 30% of the state's total production. The small cluster of fishing villages that Malwani belongs to, accounts for just under 3% of the entire state's yearly catch.[8]
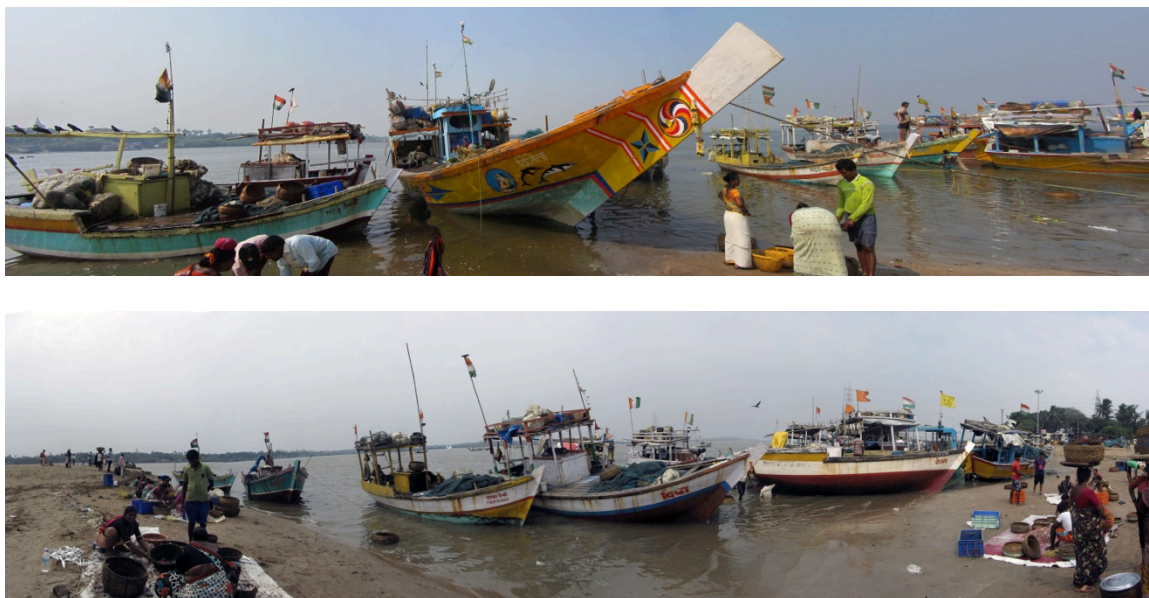
Figure 72 A and B: Mechanized boats belonging to Malwani Koliwada parked on Marve Beach.

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6   Broadly speaking, it refers to a boat that runs on any kind of engine (as opposed to manual power), but mechanized boats are clearly distinguished from trawlers in the annual surveys conducted by the state to measure the yearly catch.
7   In the language of the Maharashtra State's Fisheries Department, these forms of fishing are termed as "artisanal" fishing.
8   *Annual Fish Production Report 2010-2011.* Fisheries Department, Government of Maharashtra.

According to the Maharashtra State Department's fisheries estimates, each mechanized boat made an average of 91 efforts in that year – the term "effort" is defined by the number of times a boat casts and hauls its nets. This statistic brings home the precarious lives that fishermen lead and the tight margins in which they operate, since each mechanized vessel only ventures out once in three days, making it all the more important to maximize the potential of every catch.[9]

While working with a fisher family from Malwani Koliwada, I helped the family sort and sell fish at the boat landing sit on the beach. Fishing is an activity divided by gender – it is almost always men who are involved in the process of going out to catch fish while women usually sort and sell fish.[10] In recent years, this pattern has changed, wholesale and export markets have expanded in the city as a result of which more men take on the role of wholesalers, refrigerators, or middlemen and suppliers of fish.[11] As described in previous chapters, fishing is not strictly divided by caste either. Several migrant workers work as deck hands on boats and return to their villages in the monsoon. I worked with Daya Koli, his wife, and a crew of three men who piloted and caught fish, and two women who would help sort and sell fish for a daily wage. I would help sort the fish when the catch arrived on the shore, which meant sorting different varieties of fish into separate piles (an activity aptly called *"sorting"*), cleaning and arranging them in wicker baskets and hauling them up to the road to sell to distributers who would ice the fish overnight and sell it at the wholesale

9   *Annual Fish Production Report 2010-2011*. Fisheries Department, Government of Maharashtra.
10   For a detailed study of how women's role in fish markets has changed in the past decade, see: Peke, Shuddhawati. 2013. "Women Fish Vendors in Mumbai: A Study Report." http://aquaticcommons.org/11234/.
11   Peke's (2013) study also gives a detailed understanding of the tensions between Koli women, who traditionally worked as fish vendors, and migrant workers who come to work in the fish market. For an account of different fish harbors and markets, see: Singh, V. V., and Kuber Vidyasagar. 1998. "Major and Minor Fisheries Harbours of India 1. Fisheries Harbours in Maharashtra." *Marine Fisheries Information Service, Technical and Extension Series* 153: 1–6.

market in Navi Mumbai. It was through conversations on the beach during times of work and waiting, that I learnt specific aspects of how the everyday practice of catching, sorting, and selling fish occurs through a continuous process of improvisation based on knowledge acquired over time and based on the immediate context. Within the anthropology of fishing, different authors pose improvisation as a crucial act for maximizing ones catch or profit. For instance, in Alice Volkman's work on fisherwomen in Indonesia, she talks of improvisation as a crucial aspect of selling fish. Depending on the catch individual sellers come up with different strategies of processing and selling fish in order to maximize profit.[12] In Göetz Hoeppe's work, improvisation, strategizing, and decision-making are critically linked to expertise and mastery, as well as interaction among fisher communities, whereby decisions and actions are not carried out in isolation, but through what Hoeppe calls "group cognition."[13]

This understanding of improvisation is closely interconnected with learning and knowledge gathering. Unlike Timothy Ingold's picture of improvisation which focuses on the emergent possibilities of the present where, "to improvise," is to undertake a "forward movement that gives rise to things… and follows the ways of the world, as they unfold,"[14] improvisation in fishing is not one that simply responds to a given situation or moment, but also one that draws on past knowledge and ideally leads to a position that opens up the possibilities for future actions. I suggest that this form of improvisation is one that is learnt, and perhaps closer to Eitan Wilf's idea of improvisation in jazz as one that involves training

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12   Volkman, Toby Alice. 1994. "Our Garden Is the Sea: Contingency and Improvisation in Mandar Women's Work." *American Ethnologist* 21 (3): 564–85.
13   Hoeppe. 2007. Pg. x.
14   Ingold, T. 2010. Bringing things to life: Creative entanglements in a world of materials. *ESRC National Centre for Research Methods, NCRM Working Paper Series*, 1-15.

in specific vocabularies, mastering patterns, and cultivating a relationship with the instrument.[15]

This knowledge-building happens on multiple levels: not only do the fishermen and women have to exchange information about tides, currents, and the day-to-day behavior of fish, they also have to keep a constant look out for the catch hauled in by various boats and project the potential price tag they can hope to pin on their catch. In addition to engaging in this process of gathering and disseminating information, fishers also have to make a number of crucial decisions simultaneously. This knowledge gathering and mastery of techniques was a critical part of my own training at the beach. While I was initially given the task of shooing crows, dropping back eels in the water, and cleaning up and gathering the leftovers – tasks that are carried out by children – over a period of time I learnt faster techniques of piling fish, recognizing varieties, cleaning fish. By the end of the year I could glean what it meant to improvise in this context – if only in terms of small, unimportant acts of gauging which seller to approach, or how to open a bargain.

Perhaps one of the best descriptions of these particular forms of knowledge gathering and improvisation is one that was told to me by Gopal, the pilot of the boat with whom I worked. On a very foggy morning, I sat on the rim of the boat off the starboard quarter and watched Gopal as he guided the vessel out of the creek and into the open sea. He deftly maneuvered the boat to avoid sandbars and rocks that lurked beneath the muddy and polluted creek waters. Gopal was generally regarded as an expert pilot in the village, with an intimate knowledge of the ins and outs of the creek, each landmark, and feature of the dynamic waterway. While others would claim that he could, and had on several occasions,

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15   Wilf, E. 2012. Rituals of creativity: tradition, modernity, and the "acoustic unconscious" in a US collegiate jazz music program. *American anthropologist*, *114*(1), 32-44.

navigate the boat in and out of the creek into open waters unaided on the darkest of nights, Gopal himself would brush off these statements and attribute such events to luck. However, once, while sorting fish I had happened to ask him what one had to do in order to gain such luck as he seemed to possess, to which he had replied that luck, in fact, was the final, most trivial ingredient of a process which involved amassing a great deal of experience over time and on casting as many lines as possible over the course of the season. It was only through this combined act that one could hope to maximize ones potential for profit. The process he emphasized was one of improvisation based on information gathered on the fly, and on information stocked up through years of experience. But improvisation in itself was not enough, one had to improvise such that one balanced risk taking in relation to possible positive outcomes. This act of improvisation stitched together past experience with emergent conditions in order to maximize future possibilities. Or as Gopal explained, one learnt the position of sandbars and rocks over the years until one knew them intimately enough. One also learnt to understand the boat and the water by muscle and touch, feeling the way through the waters, keeping an eye out for obstacles and paying keen attention to the least bit of suspicious resistance from the boat's mechanical steering rod.

The villages along Mumbai's shore follow a complex system of marine tenure that is particular to the fishing practice followed by Koli communities along the western coast. Each village controls one part of the water where boats from the village fish. Nearly all small-scale mechanized boat operators use fixed bag-nets for fishing. This is a process where a conical net is attached to a buoy that is anchored by stakes located at specific depths in the ocean (see Fig. 86). Typically, each stake and buoy is owned and operated by the owner of each boat. This process ensures each village a share of marine space, and set spots that are associated with each boat (Fig. 87). Such a fishing process is very different from ones

associated with any kind of itinerant marine vessel, which travels around in the sea in order to find and catch fish, dragging a net in its wake or, as in the case of trawlers, along the ocean floor. This process is akin to the practice of fishing that utilizes fixed nets that catch fish as a result of tidal currents, such as those followed by fishermen who construct large fishing nets at fixed spots along the mouth of creeks, which are then lowered with respect to tidal action. This system ensures some form of equity to all fishers, even if it restricts their potential area for catching fish. This system also results in some asymmetry in terms of the species distribution, for example, boats from Malwani made most of their money from catching shrimp, while other villages would catch other kids of fish depending on where their stakes were zoned.
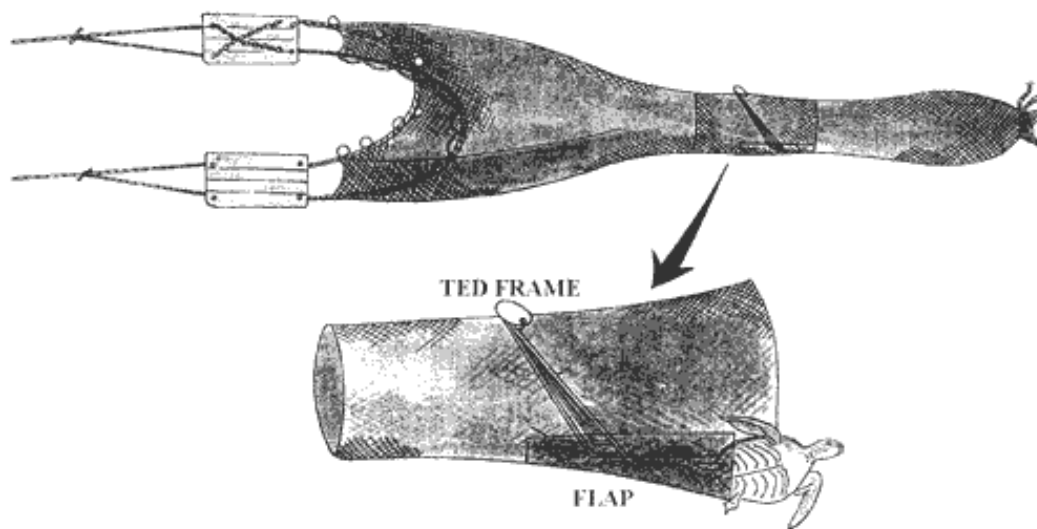

Figure 73: A bag-net. The bag-nets used by a number of fishermen have two components. The front part of the net has a broader gauge and is used for catching larger fish. A narrow gauge net (called "sari") is attached at the back that collects small shrimp. Source: fao.org

Figure 74: A buoy to which a bag-net gets attached. Usually, the fishermen record the position of the buoy on their GPS devices and come back to it when required.

While this description of marine tenure arrangements along Mumbai's coast might appear as a stable and preset arrangement as it completely does away with the problem of "finding" fish, this does not entirely eliminate all the unknown or unstable elements that make up fishing. As James Wilson notes in his essay on fishing and knowledge production, seas and oceans are a vast and unpredictable field, where no one boat or fisherman working alone could possibly hope to be successful.[16] In such a scenario, "active knowledge-making," a term I borrow from Götz Hoeppe's work on fishing in South India, is a process that is vital to a fisher community's success.[17] This process of active knowledge making involves gathering information on an individual level (such as checking the height of the tide and keeping a track of the weather) and at the level of the collective, which takes the form of fast snippets of information that pass between boats. However, this process of knowledge production relies not just on assessing events and conditions as they come into being, but also on cross cutting and analyzing that information in relation to past experiences of similar

16 Wilson, James A. 1990. "Fishing for Knowledge." *Land Economics* 66 (1): 12–29.
17 Hoeppe, Götz. 2007. Conversations on the Beach: Fishermen's Knowledge, Metaphor and Environmental Change in South India. Berghahn Books.

events, seasonal occurrences, and cycles and, lastly, on that intangible, unknowable substance that is a fisherman's luck.

Daya Koli was carrying a GPS device, which would point us to their stake and buoy fixed at a depth of seven fathoms (or *"wav,"* in Marathi) (Fig. 88). As we reached the area where the stake was secured, one of the deck hands grabbed the buoy and hauled it on board. The men opened up the cargo hold on the boat to take out the long net, which would be secured on one end to the buoy. The net, which was shaped like long sack (hence the name "bag-net") unfurled in the water, held up by a line of buoys. On both sides, I spotted other boats that had also tied up their nets to their respective stakes and buoys. To the north, Daya Koli explained, were the boats from Manori fishing village. And to the south, were boats from "our" village. Before we had set off that morning, Daya Koli had conferred by phone with other boats that had gone ahead, to decide the depth at which to cast their nets. Before cell phones, he explained, the only source of information would be other boats at the beach, where fishermen would make a decision based on weather and tidal conditions, both of which are critical factors in small scale mechanized fishing.

Figure 75: Many boat Captains carry GPS devices that record specific positions of stakes to which they attach their nets.

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Since bag-nets are nets that are fixed to a static point and not dragged behind a boat, fishers rely a lot on the force of the tidal current to keep their nets afloat.[18] With respect to tides, fishermen have to be wary and attentive both in terms of the daily tidal rhythms and the monthly lunar cycle. India's west coast experiences semi-diurnal tides, which means that it gets two sets of high and low tides of varying magnitude every day (see Fig.89). Though, theoretically, this provides fishermen two sets of opportunities on any given day to cast their nets, nearly all mechanized fishing happens in the morning. The tidal forces follow another cycle based on the lunar month where they move between stronger spring tides (termed as *"jowar")* and weaker neap tides (*"bhang").* As the force of the tidal current is very low during neap tides, it is a challenge to keep the nets open, and the waters tend to be more still (Fig. 90 and 91). Even the fish are thought to be more "quiet" or still as the water does not churn them and move them into the nets. During this period, fishers have to account for the cost of going out to fish against a future potential catch. Thus, fishers have to make quick decisions about whether or not to cast their nets, especially in the days around the first and third quarters of the moon based on weather conditions and by paying attention to the decisions and actions of others.
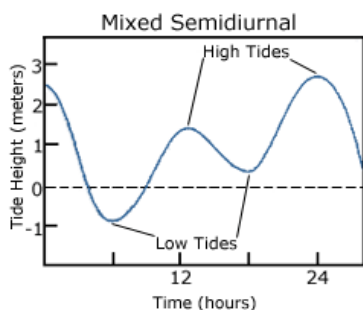
Figure 76: Mumbai's coast experiences "mixed" tides, where two sets of high and low tides occur in a period of 24 hours. Source: noaa.org

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18   This is described as fishing with "passive" gear. While one can "actively" look for shoals of fish and capture them upon determining their location, passive gear involves nets suspended in water, which rely on the movement of fish and on currents.

Figure 77: Bag-nets attached to a buoy begin to unfurl in the water with the current.

Figure 78: Fishermen must work fast to attach a series of nets that re held afloat by the buoy before the tidal currents change. As this picture shows, these nets are stored under the deck in the front of the boat.

After the men attached the nets to the buoy, the nets hung suspended under the water, while the men slept as they waited for the tide to turn. A few hours later, as they hauled the nets in, Daya Koli sighed as he saw the catch come up with bright patches of purple intermixed in it, a sign of jellyfish mixed in with the entire catch. The fishermen continued to roughly sort the catch as they hauled it in (Fig 93). We headed back to the beach where, an hour later, we began hauling the catch to the shore to sort and sell it – a process that I had become very familiar with over the year as nearly all my days were spent with the women on the beach, and occasionally, in the markets.

Figure 79: Nets are hauled in as the tide begins to change.

Figure 80: While the occasional jellyfish is easy to separate, jellyfish and algal blooms make the catch unsellable.

As the map in Fig. 94 shows, the zone where the stakes and buoys are attached has not shifted much in the last few decades, despite the introduction of new technologies in fishing. In the 1950s and 60s the Maharashtra State began offering subsidies to fishermen in order to introduce new technologies such as large-scale trawler and purse-seine net fishing. Over the years, artisanal boats, which used to rely on wind sails, slowly converted to using diesel motors. These motors are generally retrofitted from old truck engines, and modified as inboard or outboard motors (Fig. 95). Though trawlers and purse seine netters move around a lot: they, like gill net and bag-net fishermen might also utilize older established marine tenure agreements (Fig. 96).
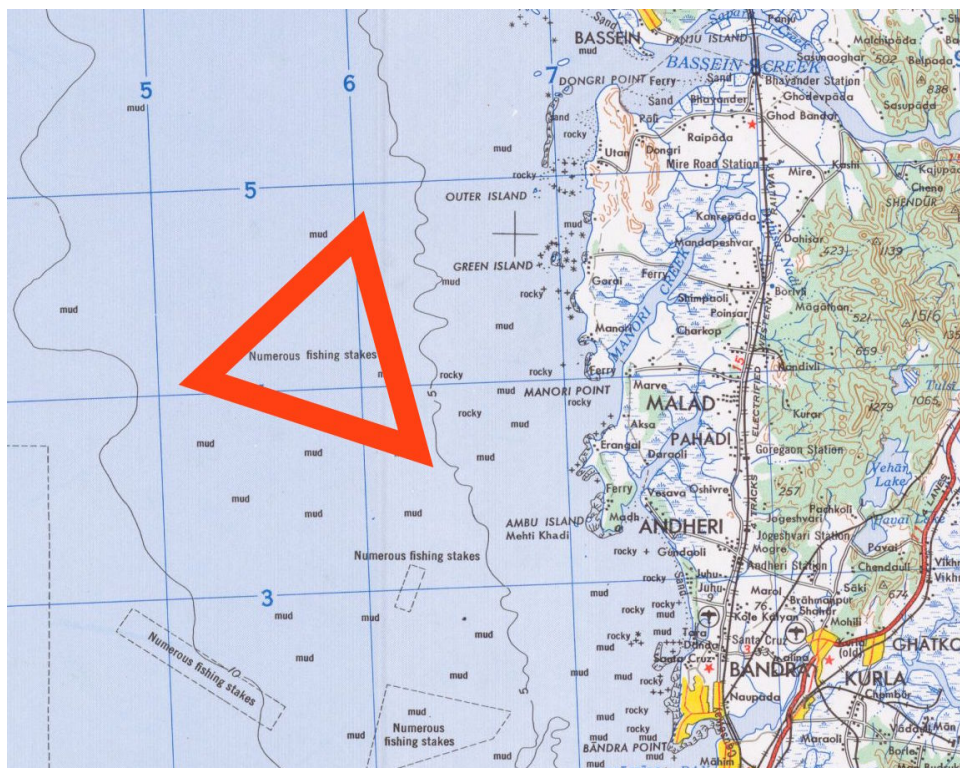
Figure 81: The red triangle on this map, taken from a redrawn topographic survey sheet, shows the approximate location of the fishing stakes in the Arabian Sea. The coastline is 7 km to the east.

Figure 82: The picture above shows a retrofitted diesel engine typically used on boats. The engine is attached to the tiller that allows the pilot to steer the boat.

Figure 83: Different boats from the same fishing village attach their bag-nets in a line within the zone where they fish.

Fisherwomen, who are primarily engaged in the activity of sorting and selling fish, have to get a quick sense of the day's haul – not just in terms of their boat, but also in relation to all other boats at each landing site in order to set a price for their catch that not only maximizes their profit but also guarantees a sale. This process of continuous assessment begins even before the boats actually return to the landing site with their catch. As the tide turn, I would wait everyday with Hema, Daya Koli's wife, who was our boss on the beach. While we sat in the shade cast by the trucks, Hema and the other women would exchange friendly banter that was also an exercise in gaining information regarding the previous day's catch, the negotiated price, news from the wholesale market, and appraising the catch from the boats that returned early as a way of gauging the potential catch and estimating its price

(Fig. 97). As Anita Maurstad's work on long-line fishing shows, such knowledge is not freely given; it involves paying attention when others conduct sales and through an active appraisal of their catch, and by paying attention to the casual talk that circulates on the beach.[19] Maurstad suggests that accumulating this type of "knowledge of people" is an important aspect in the active management of a fisher's knowledge.

Figure 84: Before the catch arrives, fisherwomen wait at the beach, discuss market conditions and square away the previous day's accounts.

One of the most important tasks was to square away the previous days accounts with the wholesale buyer. The women would flock around the few buyers who came to the beach, demanding the price that was agreed upon the previous day, haggling when they felt they

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19   Maurstad, Anita. 2002. "Fishing in Murky Waters: Ethics and Politics of Research on Fisher Knowledge." Marine Policy 26 (3): 159–66.

had been cheated. The competition was intense as all the women wanted the best price and to rid themselves of their catch as soon as possible. On the few occasions when the dealers seemed to offer too low a price, or if our boat had returned too late to make a sale, all the larger fish would be sent by a truck to be sold in the large government market at the nearest railway station. The main part of the catch, the large tubs of shrimp, would be carted to drying areas north of the beach where Hema Koli, along with her assistants – Meena (Gopal's wife) and Christina (a daily wage worker from Andhra Pradesh who lived in a neighboring slum), would spread out the shrimp to dry and have to spend the whole afternoon shooing crows while waiting for another agent who dealt solely in dried shrimp. This involved not only the effort of haggling with another agent; it also meant time lost from housework, paying Christina extra, and the effort of spreading and watching over the catch. While there are several women who make their living by selling fish in the retail market, or going door to door, the majority of the women who manage fish at the level of the catch try their best to sell it directly at the landing site in order to avoid additional costs or losses.

The system of selling fish worked on the basis of short-term speculation where both the buyer and the seller enter into an agreement based on a project price for the catch at the wholesale market. Once the catch arrives at the beach, most fisherwomen prefer to sell most of it to wholesale buyers as it saves them the additional coast and burden of having to transport the fish to either the market, the icing unit, or the drying area, and spares them the time required to find other buyers. When buying the catch, the dealer has to assess its value to estimate the price she will get at the wholesale market. She then pays the fisherwoman a lower amount, in order to make her profit from the difference. When she calculates this value, she also has to take into account the cost of storing and transporting the catch, all of which incurs infrastructure and labor charges.

Figure 85: Catch is taken from the boat and cleaned thoroughly in the creek.

Figure 86: After cleaning, the pile has to be carefully sorted and arranged for selling.

Figure 87: The main catch, small varieties of shrimp, are sold by the tub.

Figure 88: After sorting, the rest of the catch is carefully arranged for selling.

There were three to four wholesale dealers who regularly buy fish Manori Beach, the main landing site where boats from Malwani Koliwada were parked. Of them, Bindiya, an imposing middle-aged woman, would regularly buy a large portion of the village's catch in order to sell at the Panvel wholesale market and allowed me to shadow her at the beach for a week. After reaching an agreement with a fisherwoman, Bindiya would note down the promised price in a notebook. Thereafter, she would sell the catch at the market within 24 hours, and return to the beach to give the promised amount to the fisherwoman. Thus, each day Bindiya would not only assess the entire catch at the beach, but also gather information about the catch at other beaches to estimate the going rate at the wholesale market. Her decisions were also based on general ideas of seasonal prices in the wholesale market, a mental database that she would refer to from time to time (Fig 102).

Figure 89: Buying and selling is a quick and very tough activity where both the fishers and the whole sale dealers have to quickly assess the value of the catch from tens of different boats along with keeping a track of market conditions in order to maximize profit.

Apart from these factors, a crucial deciding aspect was her long-term relationship with the fisherwomen. The process of fixing a price was one that involved a great degree haggling, pleading, and cajoling, and cursing – an exchange that is difficult to initiate or sustain on unfamiliar terms. Within the process of haggling the fisherwomen or the dealer would recall previous favors or the fisherwoman might ask the dealer how she could give her such a low price despite "knowing her circumstances." Bindiya would often suggest that given the margins she operated on, there was very little room to negotiate if she had to make a profit. But she would also remark, when not sitting near the crowd, that once in while she would try to absorb a little short-term loss if it meant ensuring that she would have a steady supply of the catch, by offering a slightly higher price.[20] We felt the absence of this relationship most acutely when, a few months into 2012, Hema Koli fell ill and had to have surgery. Since she had conducted all the negotiations with dealers like Bindiya and built a relationship over the years, we had to manage by ourselves in her absence. Daya Koli would step in from time to time, but it was hard to negotiate with the same intensity as Hema, particularly during times of fierce competition.

It is helpful to think through Jane Guyer's concept of price as a "composite" in order to understand how value is fixed over fish as a commodity. Guyer suggests that instead of thinking of price as a "*singular* amount," one could think of it as "the results of narratives of creation, addition, and subtraction."[21] In the case of fish, one can think of price as a composite of additions and subtractions based on a mixture of factors that operate in the long and short-term: general trends in seasonal prices, projections based on daily catch at

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20   Though, in my role as a seller, I was almost certain this generosity never made an appearance.
21   Guyer, J. 2009. Composites, fictions, and risk: toward an ethnography of price in K. Hart and CM Hann (eds.) Market and Society: The Great Transformation Today. *Cambridge: Cambridge University Press. Handelman, Don (1995)'Response to Heyman, JM (1995)'Putting Power in the Anthropology of Bureaucracy: The* Immigration *and Naturalization Service at the Mexico-United States Border', Current Anthropology, 36*(2), 261-287.

different landing centers, labor and storage costs, and a protracted history of favors exchanged between different parties.

The back and forth process of fixing a composite price is one aspect of the enterprise of fishing that involves the management of knowledge, short and long-goals, and relationships. Fishers have to strike a balance between sharing "common" knowledge and hoarding certain details. James Wilson's work on practices of knowledge accumulation within fisher communities describes the tension between the individual acquisition of knowledge and shared knowledge:

"…knowledge of the ocean must be acquired and exchanged by a large number of individuals. However, when combined with the "rule of capture"—that is, the rule that whoever catches the fish owns them-the need to collectively acquire and exchange information creates conflicting incentives. The rule of capture creates very strong incentives for the individual acquisition of new knowledge (through either its production or trade), but it also leads to equally strong incentives for the withholding, distortion, and strategic use of information-incentives that tend to reduce the traded value of new knowledge."[22]

Wilson is alluding to the practice of long-line fishing, which does not involve a fixed marine tenure. However, his note on knowledge sharing is still relevant as while fishermen do have specified spots for fishing, they are still operating within the competitive terrains of both the market and the sea. Apart from relying on others as sources of knowledge, fishers also look for visual signs that refer to specific conditions or expected outcomes.[23]

Being on the beach and learning to clean, separate, arrange and sell fish is a physically arduous task, and one that involves learning several bodily techniques in order to perform these tasks with speed and efficiency. Words of countless others who taught me the basics of sorting and selling suggest to me an idea of improvisation as maximizing the field of action. Throughout this learning process of working with fish I learnt to engage in

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22   Wilson, James A. 1990. "Fishing for Knowledge." Land Economics 66 (1): 12–29.
23   Hoeppe, Götz. 2007. Conversations on the Beach: Fishermen's Knowledge, Metaphor and Environmental Change in South India. Berghahn Books.

improvisation not as a purely instrumental thing, but as a way of maintaining openness to emergent conditions. As Hoeppe describes, the process of buying and selling fish constitutes an "active knowledge making" where fishing is not a fixed routine activity, but rather, it is more an improvisational activity where "cognition" is distributed within the community. Hoeppe suggests that we can think of fishing as a "social skill" in two registers: not only do outcomes depend on the action of the team members of one boat, but they also look to the actions of others as a means of eliciting knowledge. These actions and decisions themselves cannot be thought of as simply a response to a given set of information, but as occurring in relation to different horizons of aspirations and the desire to secure the biggest catch. The actions and decisions themselves are always geared towards *opening up* further possibilities; i.e., fishers improvise with the idea of opening up potential both such that further actions are possible and such that they can secure the highest possible return for their efforts while continuously working to avoid losses and minimize risk.

Fishing, especially bag-net fishing, is a precarious occupation for many reasons. It is an occupation that can only be carried out at certain times of the year or month, depending on the tide and weather conditions, thus greatly diminishing the chances of having a higher profit margin. Fishers also have to factor in the rising cost of diesel and repair against this slim margin. As I elaborate in the later sections, fishers also work in increasingly polluted waters and in harsh conditions. Thus improvisation, decision-making, and knowledge gathering are key to not just securing an income, but are also key strategies for absorbing political, environmental, and market volatilities.

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Pollution, Ecological Politics, and Political Improvisation

In order to reckon with the new ecological and developmental horizons that often run counter to fisher community's interests, the community has to engage in a process of political improvisation that maximizes their chances for growth and the sustenance of their livelihoods. This improvisation is not one that is simply directed against the state, but rather, one that engages the state from within the policy framework. Much of this process of strategizing, forming alliances, and trying to work with state officials is also a result of the fact that the CRZ is a relatively new policy, one that is still in the early stages of implementation. In such a scenario, the fishers try to work with the possibilities in the policy framework, as it comes together. For instance, one of the requirements of the CRZ policy is that urban centers like Mumbai must have large scale waste treatment plants. Currently, most of the raw sewage produced in the Greater Mumbai region (and indeed, all along the Indian subcontinent) is released, untreated, into the sea. This waste matter includes domestic and industrial waste.[24] Fishers who cast their nets relatively close to the shore not only have to deal with physically separating this garbage from their catch, but they also have to bear the economic brunt of ecological surveys and reports that reveal the extent of the pollution.

In recent years, several national and regional dailies published articles that warned the city's residents about the dangerous levels of heavy metal in fish caught off Mumbai's coast. These pollutants also have a visible effect on marine creatures, with increasing algal, plankton, and jellyfish blooms that not only suffocate the fish, but also destroy the catch by rendering it inedible.[25] On the beach, it was not irregular to find the catch covered in blobs

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24   Kamble, Swapnil R., and Ritesh Vijay. 2010. "Assessment of Water Quality Using Cluster Analysis in Coastal Region of Mumbai, India." Environmental Monitoring and Assessment 178 (1-4): 321–32.
25   See: Narayan, Nayantara. October 13, 2014. *Sewage from Mumbai and Karachi is killing fisheries in the Arabian Sea.* http://scroll.in/article/683461/Sewage-from-Mumbai-and-Karachi-is-killing-fisheries-in-the-Arabian-Sea. Last Accessed: 1 April 2015.

of purple and pink – a sign of a jellyfish bloom. Not only do the fishers have to spend a lot of time and effort in cleaning the catch in order to sell it at the market, this laborious process also leaves them vulnerable to the effects of these pollutants. For instance, the process of manually separating and cleaning jellyfish (and the whole catch in general), which is a painful task, is done without any protective gear. Since fishers are also consumers of fish –the leftover catch is almost always taken home for domestic consumption – they are also most vulnerable to the effects of heavy metal poisoning. Artisanal fishing communities are also facing the impact of over fishing – a problem, which is in part created by intensive fishing technologies such as trawling and purse-seine netting. As Alicia Fentiman's study of the impact of drilling for oil on fishing communities in the Niger Delta shows, pollutants and climate change stressors are not just experienced on the body, on ecology, or on livelihoods, they also leave deep marks on other aspects of the communities' political and cultural life.[26] As Orlove et. al. show in their study of rain-fed farming in Uganda, in order to meet the challenges posed by pollution and climate change, not only do communities find adaptive strategies (such as recognizing signs of impending weather, changes in seasonal cycles etc), they are also invested in, and use, new technologies and tactics.[27] While the CRZ does attempt to address the long-term concerns of pollution and climate change, especially through massive infrastructural projects, the problems and anxieties it creates in the short-

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On Jellyfish blooms, see: Doctor, Vikram. 6 September 2014. *Jellyfish blooms and Ganapati immersions.* The Economic Times. http://blogs.economictimes.indiatimes.com/onmyplate/jellyfish-blooms-and-ganapati-immersions/

26   Fentiman, Alicia. 1998. "The Anthropology of Oil: The Impact of the Oil Industry on a Fishing Community in the Niger Delta."(Though Fentiman's commitments are to showing the ways in which activities such as drilling destroy the unique characteristics of cultures, a position that I am not entirely in agreement with.)

27   Orlove, Ben, Carla Roncoli, Merit Kabugo, and Abushen Majugu. 2010. "Indigenous Climate Knowledge in Southern Uganda: The Multiple Components of a Dynamic Regional System." Climatic Change 100 (2): 243–65.

term prevent fisher communities from fully engaging with these ecological visions (even if to

dispute them).

Figure 90: All sorting is done manually and in the picture above, the two women have sorted the catch into tubs of mollusks (squid and octopus), Gold Spotted Anchovies (called "mandeli"), red prawns, and on the extreme right is a pile of belt fish (or "wagti")

Figure 91: Depending on the tide and the location where the boat casts its line, the catch contains various amounts of garbage and mud, which are dumped untreated into the sea.

Figure 92: Once the fish are sorted, cleaned, and piled, the stuff that is unfit for consumption is carried away by the daily wage laborers who sell it by the bagful to be processed as fertilizer.

Since the 2011 CRZ specifies that all waste material that is dumped into the sea must be treated, the Mumbai Municipal Corporation began drawing up plans and selecting locations from sewage treatment plants around the city. While such a plant would be beneficial for the community in the long run, some of the proposed waste channels cut across lands allocated to a cluster of fishing villages. Moreover, the waste channels would be connected to pipes that would lead the treated waste far out into the sea and released in the middle of the zones where some fisher communities had hooked their bag-nets. This resulted in a series of negotiations between the fishers and the state and internal negotiations between different fisher communities as they all face different kinds of pressures from this policy. As a number of members noted after one particularly hostile meeting, despite the fact that such a treatment plant would benefit everyone in the long run, it was important to continue negotiations in order to maximize the compensations those specific settlements would receive and to ensure the exact locations of the pipes did not interfere with existing marine tenure arrangements. In the course of the negotiations on the sewage treatment plants, a loose alliance emerged where most of the village representatives agreed that they would support the "project affected" settlements in opposing the project until proper compensations were assured by the state.

Fishers also form loose alliances between communities that see themselves as facing the same pressures, and yet such alliances are conducted with the understanding that they may be strategically broken in the long run in order to secure rights to land, housing, infrastructure, or access to commons. In the case of the sewage treatment project, the fishermen agreed on the need to treat the waste produced by the city. In a meeting with Jairam Ramesh, India's environment minister in 2010, several fishermen urged him to address the problems caused by pollution, especially by plastic garbage that choked fish,

destroyed breeding grounds, and spoilt catch. However, projects that address these long-term concerns often open up immediate threat to housing and commons, and the possibility of displacement. Such situations necessitate engaging in political actions, forming alliances, collecting documents, rallying support – actions that must be performed in relation to a shifting terrain of events and goals. Each of these actions is motivated by the aim of opening up further possibilities for action, and allaying risks of foreclosure. For instance, fishers from different villages may stand with settlements that are affected by infrastructure projects with the understanding that not only will the support be returned in the future, but also in the event that projects present benefits to the community, the nature of their support may alter (i.e., they might make a case for additional compensation, ensure that the settlements are rehoused etc.). Similarly, individual fishing villages may make the decision to accept the terms of rehabilitation, or even make an alliance with a private developer.

Fisher communities engage in specific political strategies in order to contain the immediate risks, such as that of displacement. However, these risks and strategies are carried out against a long-term horizon of other risks pertaining to ecology and livelihood, which does not register easily within these immediate negotiations or improvised actions. Rather, these short-term negotiations can be understood in terms of what AbdouMaliq Simone refers to as "people as infrastructure," which he defines as "economic collaboration among residents seemingly marginalized from and immiserated by urban life." Simone writes that:

"…I wish to extend the notion of infrastructure directly to people's activities in the city. African cities are characterized by incessantly flexible, mobile, and provisional intersections of residents that operate without clearly delineated notions of how the city is to be inhabited and used. These intersections, particularly in the last two decades, have depended on the ability of residents to engage complex combinations of objects, spaces, persons, and practices. These conjunctions become an infrastructure — a platform providing for and reproducing life in the city. Indeed, as I illustrate through a range of ethnographic materials on inner-city Johannesburg, an experience of regularity capable of anchoring the livelihoods of residents and their transactions with one another is consolidated precisely because the outcomes of residents' reciprocal efforts are radically open, flexible, and provisional. In other words, a specific economy of perception and collaborative practice is constituted through the capacity of individual actors to circulate across and become familiar with a

broad range of spatial, residential, economic, and transactional positions. Even when actors do different things with one another in different places, each carries traces of past collaboration and an implicit willingness to interact with one another in ways that draw on multiple social positions."[28]

Different kinds of risks circulate within terrain of political negotiation and improvisation risk of losing one's house, combined with the health risks associated with handling fish). This leads to what Elisabeth Beck-Gernsheim describes as a "competition between different concepts of risk" where the outcome is not entirely predictable:

"The displacement of one concept of risk by the other is certainly not theoretically tenable, and represents an inadmissible abbreviation of the relationship between nature and culture. The question is, however, how these things will look in practice – how these two concepts of risk will relate to one another in the competition for public attention, political recognition, financial means, political measures and priorities, whether they are played off against one another and which will dominate in the end."[29]

Policies such as the CRZ and its associated projects bring forward different kinds of risk that are not in their nature commensurable, and thus constitute an uncertain field of action. Thus, each of fishers' moves is a concerted attempt to contain risk, while, as Mary Douglas suggests in her work on institutionalized risk management, trying to occupy a position of minimum risk, and moving towards positions that offer maximum flexibility in terms of future action.[30] I suggest that one can draw a not so neat, yet productive parallel between fishing and political improvisation, where an act of improvisation is not one that simply responds to a given situation or moment, but also one that ideally leads to a position that opens up, maximally, the possibilities for future actions. However, what gets continually deferred in this process of improvisation, are the problems of ecology and climate change, which are often couched within the dramatic conflicts that take place around housing, land, and infrastructure. What I mean to suggest is not that fishers are not concerned about

28   Simone, AbdouMaliq. 2004. "People as Infrastructure: Intersecting Fragments in Johannesburg." *Public Culture* 16 (3): 407–29. Pg. 407-8.

29   Beck-Gernsheim, Elisabeth. 1996. "Life as a planning project." In *Risk, environment and modernity: Towards a new ecology* .139-153.

30   Douglas Mary. 2013. Risks of the Risk Officer. In, Fardon, Richard. *Mary Douglas. Cultures and crises: understanding risk and resolution*. Sage.

climate change, but that in some ways they are unable to frame their opposition to the CRZ in terms of climate change and an impending ecological crisis because of the immediate danger posed by the threat of displacement. In some ways, as Erica Schoenberger suggests, this incapacity to act in relation to impeding ecological crisis emerges out of the kinds of institutional structures and policies that communities such as the fishers are caught in.[31]

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Territoriality, Security and Ecological Risk

Given the many variables that animate fishing, and the slim profit margins these communities operate in, events like oil spills, beached tankers, or damning reports about coastal pollution levels, introduce a new set of factors within this field that imbue it with a heightened sense of precariousness. This should not be taken to mean that fishers are not concerned with pollution or climate change issues, but rather, as an opening to understand the kinds of pressures that might be produced as a result of the process discourse of ecological reform instituted by the state.

The rapid rate of urban development in the northern suburbs has also introduced tremendous land pressure, just as catch along Mumbai's shore steadily declines. As discussed at some length in Chapter One, policies like the Coastal Regulatory Zone were introduced as an organized governmental response to threats posed by events like oil spills and tsunamis, and the pressures of unplanned urbanization on coastal communities. The 2011 CRZ policy classifies the coast into zones of varying ecological sensitivity and resource value based on which different development potentials or restrictions are enforced within those zones.

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31 Schoenberger, Erica. 2014. *Nature, Choice and Social Power*. Routledge.

However, another aspect of this policy is the way in which produces the CRZ as a territorial entity over which the central government can exercise authority, particularly after events such as the 2008 terror attacks where the government alleged that a team of terrorists had entered the city by the sea. The 2011 CRZ reinforced idea of boundary waters as a line that it attempted to control through surveillance, while simultaneously opening up the coastal zone to global flows of capital and development through management practices and discourses. This involved initiating a massive set of reforms in terms of land-use, housing, and surveys – mechanism that ultimately become points of contention between the coastal "populations" and the state. In such a scenario, long-term horizons of ecological sustainability are often deferred in place of shorter-term horizons of uncertainty concerning housing, livelihood, and right over land.

The first version of the CRZ, which was released in 1991, did not include the coastal waters in its definition of coastal zone, and ended at the low tide line on the beach. Meanwhile the "Territorial Waters, Continental Shelf, Exclusive Economic Zone and other Maritime Zones Act" of 1976 specified that India's sovereignty "extends and has always extended" to the waters, seabed, and sub-soil extending up to 12 nautical miles from its shores.[32] It was not until 2004 when, upon the recommendation of the Swaminathan Committee, the Ministry of Environment and Forests (MoEF) added the waters from the high tide line along the shore up to the boundary waters into the CRZ.[33] However, what the Territorial Waters and Maritime Zone Act of 1976 did introduce was the idea of the sea, particularly the continental shelf, as an "Exclusive Economic Zone" or a productive entity.

32   For a detailed explanation see: The Territorial Waters, Continental Shelf, Exclusive Economic Zone and other Maritime Zones Act. Act No. 80 of 28 May 1976. Part 3 (2).
33   While I discuss the role of this committee at some length in Chapter One, I am not certain as to why it recommended that the territorial waters be added to the CRZ. The only explanation that I have come across is that it was a logical, even commonsensical addition. For a detailed list of proposed amendments, see: Discussion paper on coastal regulation zone 2010. *MoEF*. Accessible at:
https://www.elaw.org/system/files/CRZ_DraftNotification_ConceptNote_April2010.pdf

An important detail to note is that this boundary water was initially conceived of as a somewhat porous line. Following international convention, nations such as India could stake a claim on the natural resources in within the Exclusive Economic Zone, while allowing the right of "innocent passage" to foreign vessels.[34]

This language of the continental shelf as an economic zone has come to define the ways in which the state monitors and surveys fishing activities. For instance, all yearly marine surveys (at least from the past two decades) begin with a note that the fisher communities "exploit" about 50% of the total continental shelf area of 112,000 sq. km.[35] In terms of the fishing, this idea of the sea as an economic zone takes fishing as a productive activity into account, but nevertheless, does not delve into the specific forms of marine tenure followed by artisanal fishing communities. This is also true of the CRZ; though the new coastal policy now extends into the waters and claims to protect "traditional" livelihoods, it still does not make any note of structures and arrangements used by the fishing community, focusing instead on revenue and resources that it seeks to control.

In order to understand the ways in which boundary waters, zones, fisher populations, and productivity become entangled, it is helpful to think of the CRZ as what Foucault describes as a "mechanism of security."[36] I have ready described the way in which the CRZ law came to be framed in terms of the idea of "management" of ecological resources. The main aim of this framework is to balance ecological risk in relation to

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34   As J.C. Phillips notes, the boundary water was *supposed* to be porous according to the spirit of the law: Phillips, J. C. 1977. "The Exclusive Economic Zone as a Concept in International Law." *The International and Comparative Law Quarterly* 26 (3): 585–618.
35   For general statistical information, see: www.dahd.nic.in/dahd/WriteReadData/Fisheries States Profile/Maharashtra.pdf. (Department of Animal Husbandry, Dairying, and Fishing, Ministry of Agriculture, Government of India.) Last accessed: February 18, 2015. For yearly statistical reports, see: Annual Fish Production Reports published by the Department of Fisheries, Maharashtra Government. The percentage of continental shelf area utilized by fishers changes from year to year, 50% represents a rather generalized average of the figures from the last few years.
36 Michel Foucault, Michel Senellart, François Ewald, and Alessandro Fontana. 2009. *Security, Territory, Population: Lectures at the Collège de France 1977–1978*. Vol. 4. Macmillan.

possible gains from natural resources, and this balancing act introduces a "bandwidth of the acceptable" through actions such as zoning, defining new land use categories etc. Foucault describes how such apparatuses of security work through the example of theft:

"The third form is not typical of the legal code or the disciplinary mechanism, but of the apparatus (dispositif) of security, that is to say, of the set of those phenomena that I now want to study. Putting it in a still absolutely general way, the apparatus of security inserts the phenomenon in question, namely theft, within a series of probable events. Second, the reactions of power to this phenomenon are inserted in a calculation of cost. Finally, third, instead of a binary division between the permitted and the prohibited, one establishes an average considered as optimal on the one hand, and, on the other, a bandwidth of the acceptable that must not be exceeded. In this way a completely different distribution of things and mechanisms takes shape."[37]

The CRZ, as a mechanism of security, entailed a complete redistribution of the relation between people, which were redefined as specific populations with access to specific resources and rights, and coastal elements, which were redefined in relation to their ecological importance and in terms of their resource potential. In the rest of this section, I will look at how the CRZ entailed the institutions of different mechanisms of discipline – namely, the institution of housing reforms, bylaws and land use regulations. The CRZ reordered these relations, based on scientific studies and surveys conducted after events such as the 2004 Indian Ocean tsunami and the 2005 Maharashtra Floods. In terms of housing regulations, the 2011 CRZ notification set up "fishers" and "slum dwellers" as two separate categories with different rights over to housing and commons. However, it is also important to examine how the CRZ set up the coast as a zone in which such redistribution could take place. And the addition of territorial waters into the CRZ is an important point in this shift.

For Foucault, the emergence of mechanisms of security entails a critical shift in thinking about territory as directly connected to the circulation of goods and people. Scholars such as Crampton[38] and Stuart Elden[39] read Foucault to be saying that territory and

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37 Ibid. Pg. 9.
38   Crampton, Jeremy W. 2010. "Cartographic Calculations of Territory." *Progress in Human Geography*.
39   Elden, Stuart. 2007. "Governmentality, Calculation, Territory." *Environment and Planning D* 25 (3): 562.

security operate on different ideas of spatial organization based on inclusion and exclusion – where the territorial state is invested in closing off its borders, where as security requires the:

"…opening up and release of spaces, to enable circulation to enable circulation and passage. Although circulation and passage will require some regulation, this should be minimal. Discipline is centripetal, while security is centrifugal; discipline seeks to regulate everything while security seeks to regulate as little as possible, and, rather, to enable, as it is, indeed, laissez faire; discipline is isolating, working on measures of segmentation, while security seeks to incorporate, and to distribute more widely."[40]

As a result of the ways in which the CRZ simultaneously reinforces the Maritime Zone Act and the management of resources and populations, it seems to simultaneously reinforce the ideas of spatial inclusion and exclusion. Through the discourse of management, the CRZ puts resources into circulation, and it makes the space for setting up large scale developmental projects such as sand mining, nuclear power plants, and eco-tourism, as a means of participating in a larger global flow of capital, goods, and people. And yet, through the instantiation of boundary waters it also attempts to close off a porous edge by installing new surveillance regimes.

After the terror attacks in Mumbai in 2008, it was widely reported that the terrorists had smuggled themselves into the city via the coast, and docked at a landing site at a fishing village.[41] The reinforcement of coastal borders was a direct outcome of this event. The Indian coastguard began instituting rigorous security drills along the coast as well as enforcing stricter measures over issuing boat licenses. While these measures put the fisher communities under the coastguard's scanner, they were also paradoxically framed as a part of the state's security apparatus. Thus, they were both subject to new controls and understood as a positive line of defense or security management.

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40   Elden. 2007. Pg. 565
41   Rath, Saroj Kumar. 2010. "New Terror Architecture in South Asia 26/11 Mumbai Attacks Inquiry." *India Quarterly: A Journal of International Affairs* 66 (4): 359–81.

In 2011, I had just begun my fieldwork, when a series of coordinated bombs went off in the southern part of the city, within densely populated market places. While there was no indication that this event had anything to do with a breach of security along the coast, the coastguard began once again conducting security drills and examining their register of boat licenses.[42] A few months later, after the fishing season had resumed, I arrived on the beach early one morning in order to go along with Daya Koli on the boat to observe the process of bag-net fishing. Though Daya Koli had explained the process several times through words and diagrams, I was unable to understand exactly how the process worked and had requested that I be allowed to come along on the fishing boat. After months of sorting and selling fish at the landing site and relentless persuasion, I was allowed to come on board on what promised to be a very calm and uneventful day. However, when I reached the landing site I was informed that word had come up the coast of a possible coastguard drill, which could pose a problem, as they might be suspicious of a boat with a woman on board. The drill, which the fishers were very familiar with, involved security personnel dressing up as "fake" terrorists in order to ascertain whether they could get past the fleet of fishing vessels parked out in the sea.[43] This drill was a part of the new border security measures initiated by the coastguard.

Operations such as these simultaneously frame the fishers as both the object of scrutiny and the scrutinizers of the coast.[44] It is through this combination of reinforcing borders, restructuring land, resurveying populations, and reordering the relation between

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42   See Jones's essay on border closures and India's security policy: Jones, Reece. 2009. "Geopolitical Boundary Narratives, the Global War on Terror and Border Fencing in India." *Transactions of the Institute of British Geographers* 34 (3): 290–304.

43   These security measures were called "Operation Sagar Kavach" (Operation *"Ocean Shield")* See: *'Sagar Kavach' coastal security exercise begins.* 11 April 2013. The Hindu. http://www.thehindu.com/todays-paper/tp-national/tp-karnataka/sagar-kavach-coastal-security-exercise-begins/article4605143.ece. Last Accessed: 1 April 1, 2015

44   Without understanding how information travels along the coast.

populations, resources and livelihoods that the coast was inscribed as a zone of security where questions about the effect of this restructuring on the ecology, on fishing, housing, land rights, and even topography were in flux. In writing about the differences between the spaces of sovereignty, discipline, and security, Foucault describes the space of security as a "milieu" that is inherently characterized by uncertainty and risk:

"To summarize all this, let's say then that sovereignty capitalizes a territory, raising the major problem of the seat of government, whereas discipline structures a space and addresses the essential problem of a hierarchical and functional distribution of elements, and security will try to plan a milieu in terms of events or series of events or possible elements, of series that will have to be regulated within a multivalent and transformable framework. The specific space of security refers then to a series of possible events; it refers to the temporal and the uncertain, which have to be inserted within a given space. The space in which a series of uncertain elements unfold is, I think, roughly what one can call the milieu… What is the milieu? It is what is needed to account for action at a distance of one body on another. It is therefore the medium of an action and the element in which it circulates. It is therefore the problem of circulation and causality that is at stake in this notion of milieu."

Throughout different chapters in this dissertation I have looked at housing, zoning, and rights to commons as critical points of conflict. It is precisely at the point where disciplinary mechanisms of surveys, land reform, housing overhaul, and new urban infrastructure are introduced that conflicts arise. Indeed, as we have seen in previous chapters, much of the struggle around CRZ has happened around the question of securing housing and rights over land – issues that seem to take on a tone of urgency as a result of the way the CRZ itself is structured and unfolds in the lives of those who occupy the coast. These anxieties of securing housing, establishing an identity, being surveyed, and retaining access to commons end up are mixed up with longer term problems of pollution and the impending ecological crisis that coastal cities like Mumbai face, even if measures such as the CRZ are introduced, in part, to address these problems. It's not just that long-term ecological problems are eclipsed by local concerns, but they are folded into tactics/operations by which the coastal zones and its people and non-human life are made

productive in a certain way that makes the responsibility for ecological and security management appear always to devolve onto the citizen. This impossible responsibility occludes discussion of how policies could be meaningfully altered to forestall or change the course of eco crisis. In the next section, I look at the specific ways in which drawing and establishing particular borders become sites for engaging these conflicts and questions through cartographic representation, and the acts of drawing lines and boundaries around these zones.

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Drawing Lines

During my tenure with Daya and Hema Koli's family, I was explained the process of recognizing and assimilating signs, pieces of information, and the successive decisions through close analogies with the creek (*dariya*).[45] The creek, an inlet of water where the sea slips into the landmass, and where fresh water from lakes and run offs fall into the sea, is an extremely important element in fishing and coastal life, and in the CRZ. The beginning and end of the fishing season is marked by changes in the creek's behavior, as it "churns" with the monsoon and is "quieted" after the rains. This behavior is also a sign to determine the depth at which to fish, as the creek and the seawater are thought of as a *mixture* that is either stirred or still. To the fishers, creeks, estuaries, and bays offer a measure of protection from the direct action of the sea, places to park their boats, dry their fish, and in times when the sea is rough, a place to fish. The creek, by virtue of its form and movement, sustains forms of life both in it and along its borders. I would like to conceive of the ongoing relationship

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45 I am unsure about the use of the term "analogy" here and perhaps one way to say this would be to say that kind of intuition and reading proficiency required to fish shares a disposition with reading/mapping creeks.

between coastal communities and the creek and to creek ecologies as "cultural landscapes."[46] The CRZ completely overlooks this point as it posits an unchanging relation between fishers and the coastal landscape. It assumes that the creek has an integral, unchanging form, and that its uses can therefore also be circumscribed by unchanging "tradition." However, fishers, through the cultivation of mangroves, fishing infrastructure, and other construction projects have actively shaped the creek. Therefore, I suggest that the creek can be thought of as a milieu in which the uncertainties, rhythms, risks, and possibilities of fishing circulate. Examining these sites within the framework of boundary making techniques allows us, as Anand Pandian suggests, to "engage biopolitics in relation to the empirical specificity of particular places and histories—a way of pluralizing, that is, the forms of welfare, modes of right conduct, and kinds of living being at stake in the modern government of collective life."[47]

In the 2011 CRZ, the creek presents as an interesting conundrum as the site where the waters enter the landmass, thus making the act of drawing a line in order to demarcate the end of the coastal zone a problem. The CRZ attempts to get around this problem by measuring salinity and tidal action:

"CRZ shall apply to the land area between HTL to 100 mt or width of the creek whichever is less on the landward side along the tidal influenced water bodies that are connected to the sea and the distance up to which development along such tidal influenced water bodies is to be regulated shall be governed by the distance up to which the tidal effects are experienced which shall be determined based on salinity concentration of 5 parts per thousand (ppt) measured during the driest period of the year and distance up to which tidal effects are experienced shall be clearly identified and demarcated accordingly in the Coastal Zone Management Plans"

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46   Raffles, Hugh, and Antoinette M. G. A. Winkler Prins. 2003. "Further Reflections on Amazonian Environmental History: Transformations of Rivers and Streams." Latin American Research Review 38 (3): 165–87.
47   Pandian, Anand. 2008. "PASTORAL POWER IN THE POSTCOLONY: On the Biopolitics of the Criminal Animal in South India." *Cultural Anthropology* 23 (1): 85–117.

While on the surface, this appears as a simple problem of measuring salinity along Mumbai's creeks, surveys conducted by the team from Anna University found that the pollution level in the creeks was too high to yield a proper measurement, and this necessitated intensive laboratory analysis in order to determine the extend of the zone along these water ways. The issue of coastal pollution is a problem that the CRZ tries to address. It has also placed a great deal of stress on artisanal fishermen who, unlike trawler fishers, cannot venture too deep into the ocean to find their catch.

The Coastal Regulatory Zone contains within it several different kinds of borders. The line that marks the end of the zone across a creek is not drawn in the same way as a line that marks the end of the zone across land. While this may have been the case with earlier version of the CRZ, the revisions in the policy, particularly the task of creating high-resolution maps, necessitate different techniques of drawing these lines. For example, while the main boundary of the zone is generally defined as 500 m from the High Tide Line (HTL), the very act of locating the HTL requires surveyors to walk along the coast or use high resolution satellite surveys to find the tell tale marks that determine the limit of the tide.[48] Similarly, determining the boundaries of settlements present their own conundrums of cross checking old revenue surveys and making fresh surveys to determine the status of these settlements. Sites such as creeks, fishing settlements, commons, and coastal slums can be thought of as points where the two *milieus* – of fishing and the CRZ – meet and produce a churning or agitation that amplifies anxieties around both long and short term concerns. As Veena Das and Deborah Poole describe, "border-making practices run within the political and social territory rather than outside it."[49] But at the same time, the registration of the

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48 See Chapter 1 for a description of the process of marking this line.
49 Das, V., & Poole, D. 2004. State and its margins: comparative ethnographies. *Anthropology in the Margins of the State*, 3-33. Pg. 17.

border zone as the site of tidal 'effect' suggests that what constitutes the boundaries of governance/ governability is conceived as a site of exposure to certain kinds of external vulnerabilities. Thus environmental and security concerns dovetail in the management of the coast both as a zone where numerous elements interact. Thus, acts of drawing boundaries and distinctions between what is "inside" the zone versus what is "outside" (or even sub-zones) becomes a crucial tactic in its governance.

In this last section, I wish to focus on the act of drawing lines as a way to think about not just the anxieties that are inherent to the practices of defining the coastal zone, but also the kinds of possibilities these practices enable. The act of drawing a line simultaneously defines those who are included in the coastal zone and those who are outside of this zone. However, the act also entails identifying populations and ecological boundaries through a number of "ocular" techniques. For instance, we can think about the act of "seeing" the edges of mangrove forests (which fall under category "1" in the CRZ), which results in the creation of forest databases, erecting signs and fences that inform the public of this boundary, and enforces the regulation of these boundaries by instituting checks, patrols and by limiting the access to and activities in this sub-zone (namely, prohibiting cutting or harvesting these "forests"). The act of identifying populations concerns other documentary practices where the state secures identities (and thus, housing rights) through documents such as caste certificates and older surveys. Through fresh surveys, bureaucratic apparatuses such as the CRZ attempt a biopolitical management of different kinds of populations that are identified and "separated" in order to be governed as inhabitants of the coast.[50] Mariane Ferme describes this as a process of "hyper-identification" where communities become a

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[50]   Foucault, Michel. 1984. *The Foucault Reader.* Edited by Paul Rabinow. New York: Pantheon. (257-73)

part of various survey apparatuses and come to acquire multiple forms of identification in order to avail of particular rights and particular public schemes.

To come back to the question of drawing lines, I would like to think about sites where these lines are not so clear, where they somehow become muddled, to say that it is the point where these margins appear blurred or present particular technical and political conundrums that serve as sites where communities encounter and speak back to the state. This is not to say that there are some lines that can be easily drawn or are not contestable, but rather to say that the drawing of some lines offers certain possibilities to communities (as much as these lines are also a threat). I have looked at the ways in which the project of identifying "slums" versus "fishing settlements" presents specific threats and possibilities. Das and Poole write that it is through these identification documents that most populations "encounter the state." They also suggest that instead of solely focusing on how these documentary practices make a population "legible to itself," it is also important to look at how these "documents become embodied in forms of life through which ideas of subjects and citizens come to circulate among those who use these documents."[51] I suggest that looking at projects of drawing certain "difficult" margins (by this I mean boundary lines) can serve as portholes for understanding how maps and plans make certain ideas of subjects and citizenship possible in the context of Mumbai. And in order to do this, I return to the subject of creeks and boundary waters as a limit of the coastal zone.

As previously mentioned, creeks and boundary waters present particular problems when it comes to establishing margins and limits. While one can, in theory, say that India's territory extends to twelve nautical miles, in order to enforce this as a limit, the state has to install surveillance apparatuses to establish this boundary. While the problems of establishing

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51   Das, Veena and Poole Deborah. 2004. Pg. 16.

boundaries across water are different from establishing terrestrial boundaries, these problems should not be understood as simply resisting or confounding boundary-making practices. Instead, as Eyal Weizman writes about terrestrial surfaces, these aqueous terrains too can be thought of as a "thick fabric of complex relations, associations, and chains of actions between people, environments, and artifices." [52] In his essay on "forensic oceanography," that chronicles their project of recreating the violation of migrants' rights on high seas, Lorenzo Pezzani writes that events happening in open waters tend to be described as happening "out there" beyond the state's reach or beyond public scrutiny. However, it is possible to recreate and map events happening in these areas through the use of specific technologies and modeling techniques designed to address this very problem of mapping aqueous regions, which are, ironically, the same tools developed and used by state agencies to patrol these zones. Pezzani argues that areas such as high seas manifest specific "aesthetic conditions" where the threshold between "visibility and invisibility becomes a field of political struggle." Within these zones disciplines such as planning, architecture, and design offer up "tools for a new reading of the ocean, which in turn, opens up new spaces for political action. But venturing into this new terrain means also leaving behind the apparent safety of terrestrial areas, where legal and political orders seem to be intimately related to stable locations and orientations, and entering the maritime jurisdictions that are crisscrossed by different and often incongruous forms of governance."[53]

In the context of the CRZ and Mumbai, this aesthetic condition manifests in different ways through the collective endeavors of architects, planners, environmental activists and communities such as the fishers. While I have looked at the different ways in

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[52] See the "Surface of the Earth" project headed by Eyal Weizman: http://archive.forensic-architecture.org/lexicon/surface-of-the-earth-eyal-weizman/ Last Accessed: 1 April 2015.

[53] Pezzani, L. 2014. Mapping the sea. *Architecture and the Paradox of Dissidence*. Ed. Inez Weizman. Routledge. Pg. 115.

which these collectives have attempted to draft conceptual plans as a means of engaging the threats and possibilities opened up by the CRZ and its housing regulations, here, I want to briefly look at the ways in which they approach the intermixture of water and land as productive sites or as points where political struggles can take place. Particularly, I look at the work of Anuradha Mathur and Dilip Da Cunha, who through their exhibition titled, *"Soak: Mumbai an Estuary"* (2011),[54] sought to rethink modes of planning in the city.

Set against the backdrop of the 2005 Maharashtra Floods and long-term anxieties of sea level rise, it sought to overturn development and planning as a terrestrial activity, and instead think about specific planning strategies and practices for Mumbai as an "estuarine ecology." According to the authors, it was important to take note of the inherent aqueous nature of the city in order to prevent future calamities:

"It takes a considerable effort to enforce firmness anywhere, but it is particularly difficult to do so in an estuary, the primary ecology of Mumbai. Unlike deltas where rivers reach into the sea, estuaries allow the sea in. As such the rise and fall of the sea is not restricted to a coastline but is carried inland on a gradient that takes with it not just predictable tidal levels but the complexities of the world's oceans where the unexpected reaches beyond the horizon and often beyond control. Here the war against the monsoon is also a war against the sea. . . . If the monsoon has been cultivated as a seasonal opponent, the sea has been made a perennial one. Sea walls, landfills, causeways, tetrapods, knowledge and prediction have been used to keep the sea out. The 2005 flood, however, stilled Mumbai long enough to take notice of the sea within land's edge. It is an occurrence that can be expected to occur more often with the predicted rise in sea levels."[55]

At the heart of this project was a call to overturn the planner's cartographic vision, as, according to the authors, "design in an estuary does not work with predictions and probabilities as master plans do; instead it works by possibility and resilience."[56] At the forefront of this project were design interventions that sought to take seriously, ways in

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54   Mathur, Anuradha and Da Cunha, Dilip. 2009. *Soak: Mumbai in an Estuary.* New Delhi: Rupa Publications.

55   Mathur and Da Cunha. Pg. 56.

56   It is important to note here that the authors use the terms "possibility" and "resilience" as a way of referring to different ways of visualizing and conducting urban design, and that as such, these terms are coming out of a counter-cartography literature.

which the language of fluidity could be represented in order to rethink the plan. Thus their design interventions were presented through different techniques of combining cross sections, sketches, and photographs as a way of rethinking these interfaces of land and water.
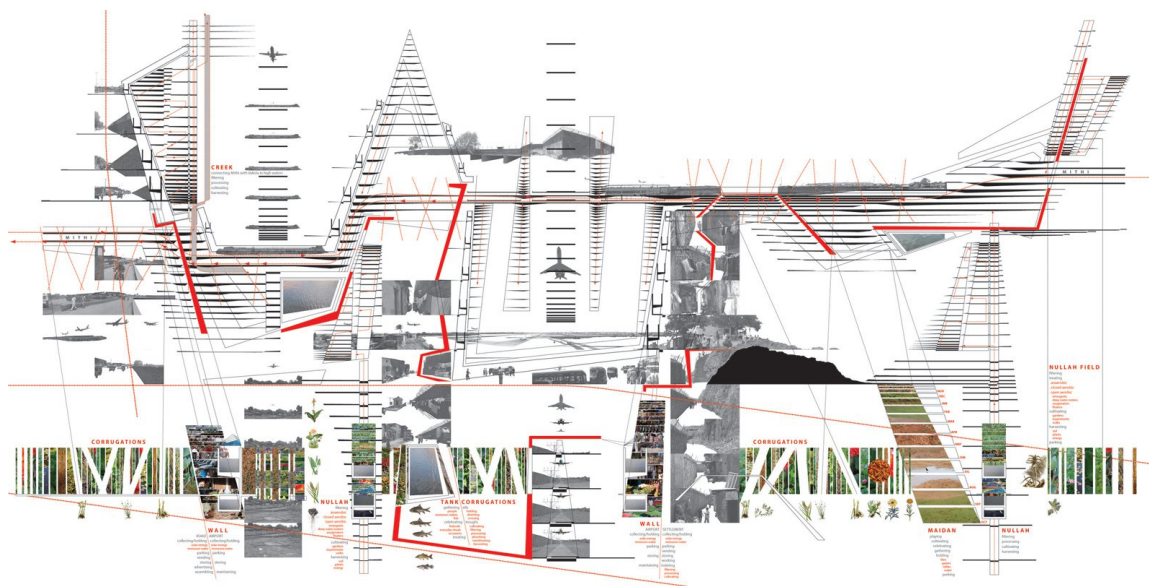

Figure 93: Anurada Mathur and Dilip da Cunha, Airport Crossing, from SOAK: Mumbai in an Estuary, *2009.*

My own position regarding cartographic technologies and visions does not match up with these scholars who position themselves in opposition to the master plan, given the many ways in which fisher communities use the language of plans to make their claims. However, I think that these projects point to a very important argument in that they position creeks, rivers, coasts, and estuaries as important sites from where claims can be made or political struggles can happen through an engagement with the visual. Critically, they show how boundaries, interfaces, and margins are not simply peripheral spaces (delineating what is the coast and what is not, or what is a village versus what is a slum), and nor do I think of them as sites of resistance. Rather, I follow Das and Poole in suggesting that these are

"spaces of creativity."[57] They are sites where bureaucratic entities can be encountered and reconfigured through acts of seeking basic rights necessary to sustain everyday life and livelihoods, such as access to beaches, drying yards, houses, toilets, and boat parking yards. While these struggles might seem to overshadow the problems of pollution and sea-level rise, they also set the stage for other projects (such as *SOAK)* to emerge. That is to say the political struggles that happens in these sites are not contained within them, but are reshaping planning practices and public sensibilities about the stakes of life/ living at these margins. Thus these sites, places where lines are not so easily drawn, make the space for different ideas of everyday life in Mumbai to come forth. They make the space to draw.

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57 Das, Veena and Poole, Deborah. 2004. Pg. 19.

Conclusion

When I began my fieldwork, I was given a smartphone as a belated birthday gift. On my long commutes in the bus, I would zoom in and out of maps on the Google Maps application, anticipating landmarks, turns, and junctions. In autorickshaws I'd insist on taking shortcuts or detours that sometimes failed to manifest en route. Some drivers would then turn around and deliver a smug, stinging, line. Others were more generous. I was not trying to find the limits of mapping, or the discordance between the map and the landscape. Instead, I was simply trying to play around and see with maps. It is tough to articulate just what came out of these experiments, though I believe that it gave me some sense of how to use applications and record GPS data and find new ways of playing around with maps. Mostly, I learnt obscure and forgotten names of streets, bus stops, hidden shops, or on the Wikimapia interface, found tags written by people marking their homes; details I would inflict on reluctant participants. When I looked up Orlem, the small colony where I stayed, I found notes from my neighbors about old acquaintances and departed friends (Fig. 2).
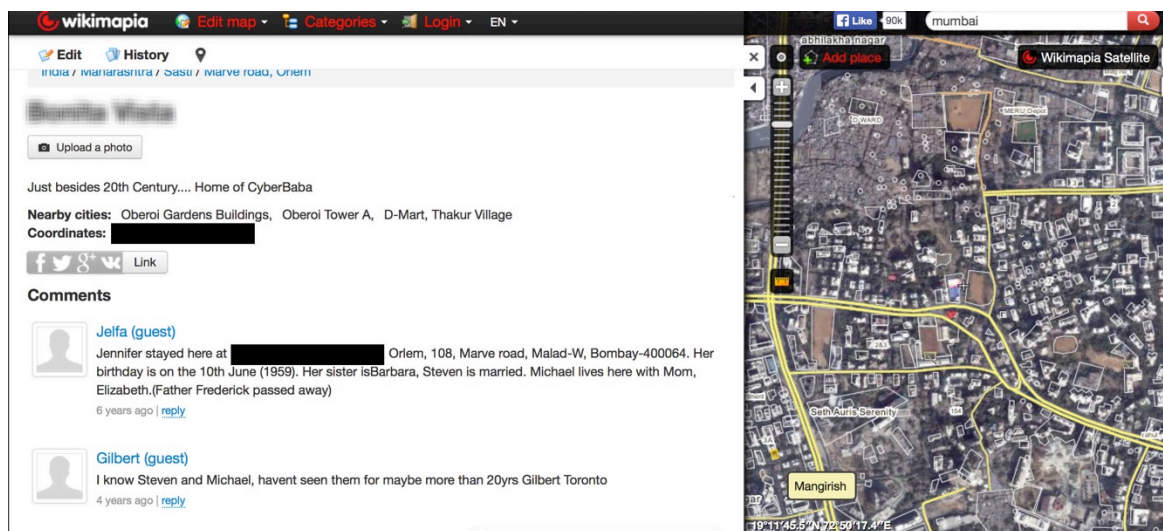
In December 2011, another friend gave me a graphic book by Shaun Tan, which contained a story about two young boys who discover an old map of their suburban neighborhood.[338] Upon finding that the map simply cuts off at one of the ends of the neighborhood, the boys speculate that perhaps nothing exists beyond the edge and set off to find that indeed, the world drops off at the end of a suburban street.

Figure 94: Illustration by Shaun Tan from "Tales from Outer Suburbia."

For me, Tan's story is a wonderful description about the capacity of a map (or a reading of a map) to manifest in the landscape. For I do not believe that the edge of the world existed and was mapped as such by a cartographer, resulting in a document that was then described by Tan in his story. To my mind, the edge of the world came into being when the boys picked up the map and saw the edge in the margins of the drawing. Tan's story is perhaps an optimistic means of talking about maps and the possibilities they bring into the

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338   Tan, Shaun. 2009. *Tales From Outer Suburbia.* New York, NY: Arthur A. Levine Books.

world. For the maps that inhabit my dissertation bring with them as much of a risk of displacement and physical harm as they do the possibility of keeping homes and envisioning neighborhoods.

Consider a recent speech given by, Raj Thackeray the leader of the regional right wing party, the *Maharashtra Navnirman Sena*. In the speech that lays out his *"Aesthetic Vision,"* Raj Thackeray criticizes the urban development projects of the Congress-led Maharashtra government. He describes Sanjay Gandhi National Park, a large forest reserve in the middle of the city, as a green zone that has been neglected by the government and exploited by the city"'s builder lobby. He then goes on to describe his aesthetic vision for the city. But what is most interesting about this video (and several others like it that have surfaced in recent times) is that it takes place entirely through the cartographic image. Using images and zooms from Google Earth, Thackeray attempts to inject both immediacy and a sense of veracity into his narrative. Thackeray's video is one example from a number of such "visionary" videos and documents that have been released by different governmental and private agencies that seek to reimagine Mumbai's future through the production and circulation of maps and plans. As such, Raj Thackeray's *Aesthetic Vision* testifies to Thomas Blom Hansen's argument that right wing regional parties such as Shiva Sena and the MNS embrace ideas of a "modern city life and technological progress" as a key means of "being urban" and this embrace of technology and technological vision is key to their success.[339] At various levels of urban governance in Mumbai, state officials have enthusiastically taken up architectural plans and renderings by leading planners and builders in the city as a means of showing their electorate the possibility of living as a global urban citizen. Simultaneously, groups of citizens

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[339]   Hansen, Thomas Blom. 2001. Wages of Violence: Naming and Identity in Postcolonial Bombay. Princeton University Press.

living, who are generally considered as the "project affected" communities –those who get displaced to make way for these visions – are also finding ways to participate through the production of conceptual plans.
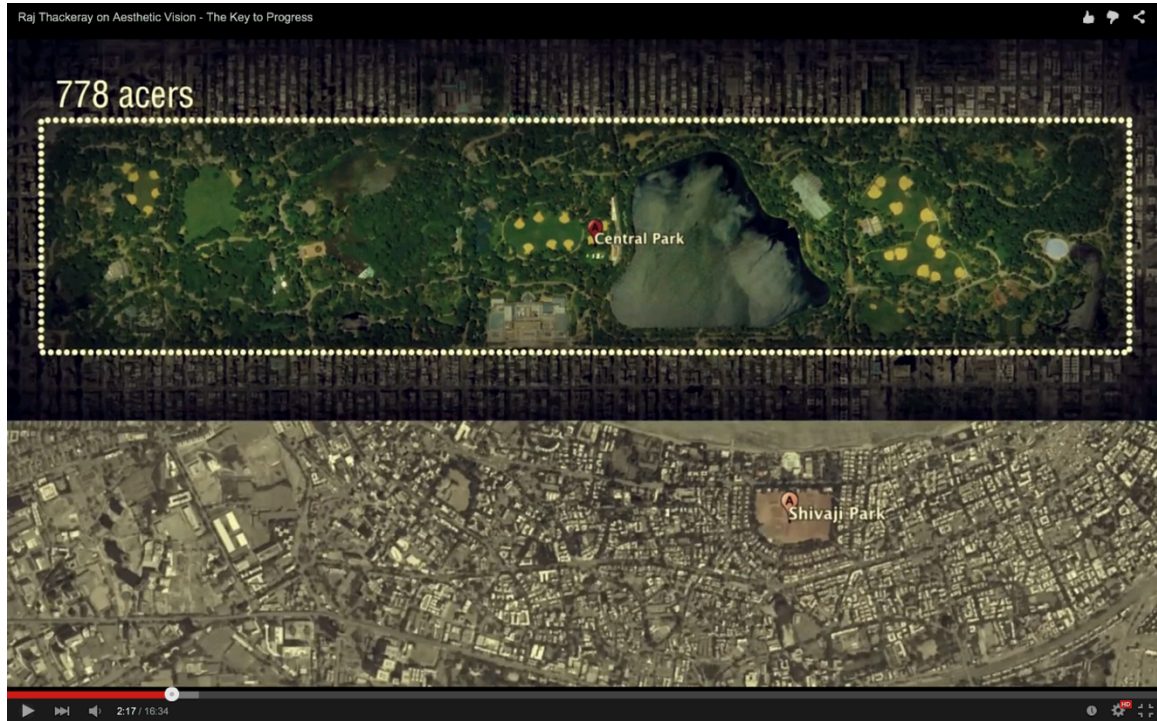

Figure 108: Screenshot from Raj Thackeray's "Aesthetic Vision" video comparing Shivaji Park in Mumbai with Central Park in New York City.

My interests in both ethnography and map are rooted in architecture. I began college in Mumbai in 1999, four years after the institution of the slum rehabilitation policy in Maharashtra. A few years into the program, the government ratified critical constitutional reforms that gave local institutions greater power over the urban transformation process. This was the same time that organizations such as the Urban Design Research Institute and PUKAR (an NGO that Arjun Appadurai headed) were set up, aided by foreign grants and institutions keen to "learn" from the global south. All of this formed a loose network of intellectuals and intellectual thought that was firmly rooted in the belief that the practice of architecture could emerge from the fabric of the city -- that the city could be a "lab" from

which built "form" could emerge. A critical aspect of this urban experimentation was mapping. Mapping was framed as the means to gain a thick understanding of this context, as a way to reach communities and to form alliances. The formal structure and the visual language of these mapping projects was one that was oriented against the cartographic plan--in this sense, it was meant to "counter" the state's visions.

In 2011, when I was poised to commence fieldwork in these massive rehab schemes, the CRZ policy was released. At the same time, the Municipal Corporation of Mumbai released its decision to revise the city's plans. The state implemented these initiatives through massive high resolution mapping projects, to which the coastal communities responded through a visual enterprise of their own. Architects, surveyors, and planners were key actors on both ends. Insofar as these initiatives, gave new life to both drawing and cartography, they provided an ideal ethnographic setting from which I could trace both the agency of maps, and the multiple political and cultural dynamics through which maps and plans gain force in the urban transformation process and the ways in which they come to be seen, shared, and valued. Through ethnography, I discovered that maps, plans, and the many other images associated with them, provide the foundation for political and ecological visions. As such, they are inseparable from the claims they make and the desires they project into the world. However, these cartographic endeavors undertaken by architecture schools and community organizations cannot simply be taken as "counter to" or resisting the state.

Instead these maps and planning projects exist in a far more complex relationship with state documents. Through this visual enterprise, residents of Mumbai attempt to carve out a claim upon the city while simultaneously availing themselves of the right s and provisions granted them. This is clear from the careful manner in which plans and maps are made to taken on the visual language of the plans produced by the state and the ways in

which the state cartographers are evoked and cartographic encounters or documentation practices are imagined.

In order to track these processes, I conducted 16 months of ethnographic fieldwork in Malvani Koliwada, a fishing village in the northern suburbs of Mumbai. Most of my days were spent dealing with fish – cleaning, sorting and selling them at the local market. Although not directly focused on maps or planning, my participation in the sorting and selling of fish, allowed me a vantage point from which to understand the ways in which the cartographic seeped into political struggles and into everyday life. It was, in addition, how I was absorbed into the household and into the social fabric of the village. At the same time, given that my fieldwork concerned aspects of land and development, this also meant that some networks beyond the village were closed to me. I could not, for example, ask questions about land transactions in other villages, that information had to be gathered in other ways.

As I argue in the preceding chapters, neoliberal maps and plans gain a very particular kind of social and political force at different times and in different cultural and political contexts. This is deeply connected to the relation that cartographic images have with the landscape. They are seen as either pointing to something that exists, or something that might exist in the future. Particular moments—when a map is announced or in the moment of its drawing – become moments of intense political activity precisely because intervening in the making of these images becomes a means of intervening in the physical landscape of the city in concrete terms. In the literature on cartography, particularly history of cartography, maps are conceived as instruments of governance, and "mapping" as the social aspects of cartography. This dissertation is located between these two registers. I take maps as always simultaneously moving between being a state document and as an image that opens up the possibility for political action in different ways.

By the time I completed my dissertation, people living in informal settlements near Malwani Koliwada put together a development plan document for their community and presented it to the Maharashtra government. In 2014, the Maharashtra government began moving forward a plan to redevelop the city's eastern waterfronts – the old port land, which has traditionally been a working class neighborhood. The government set up a panel that solicited suggestions for developing 730 hectares of port land, and these conceptual plans have been widely circulated. Ideas range from the world's tallest building, building a park to protect flamingo breeding grounds, and setting up business districts and public parks. Fig.109 shows a proposal by Hafeez Contractor, a very famous and prolific real estate developer in the city, and it is just one of the many proposals and plan documents that the panel has received.[340] What I have attempted to show through my dissertation is that there is no clear relationship between cartographic technologies and power, and it cannot simply be taken as an "instrument" wielded by the state or developers. Neither can these images be relegated to the domain of experts and expert knowledge. Simultaneously to say that the production and circulation of these images by citizen's collectives are acts of "resisting" the state or mainstream developmental visions is also too simplistic an argument. Instead I look at maps and plans as they become entangled with urban politics and urban desires and relationships that are often contradictory in nature. The connection that maps and plans share with the landscape (or a possible landscape) is critical to their entanglements. Because of the ways it introduces possibilities into the urban landscape, the cartographic image takes on a critical importance in the context of Mumbai's contemporary urban transformation process and becomes the site from where urban visions and subjectivity is secured. In the

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340   Chandrashekhar, Vaishnavi. 27 November 2014.*The dockland redevelopment: Mumbai's last big chance?* The Guardian. http://www.theguardian.com/cities/2014/nov/28/dockland-redevelopment-mumbai-housing-transport. Last Accessed: 3 April 2015.

last section, I turn to looking at maps "in process" as a way to think about the introduction of possibilities through drawing.

Figure 95: Hafeez Contractor's vision for developing the eastern waterfronts of the city. Source: theguardian.co.uk

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Drawing Maps

In January 2012, I attended a public awareness campaign conducted by YUVA (Youth for Unity and Voluntary Action), an NGO that broadly works on issues related to housing rights and infrastructure in informal settlements and on empowering communities. When the Municipal Corporation began the process of revising the city's development plan, NGOs such as YUVA and UDRI (Urban Design Research Institute) emerged as important organizations that campaigned for public participation. YUVA was deeply involved in community organization in informal settlements in the northern suburbs, near my field site.

At the time, the NGO was organizing rallies in the settlements urging residents to participate in the planning process (at the time of writing this chapter, YUVA, in collaboration with the residents, has managed to publish a community development plan that it submitted to the state). In order to recruit and mobilize residents a troupe of volunteers staged a street play. The play began with the troupe dancing and running around in a circle and shouting, *"Aaya re aaya, logon re logon! Vikas ki batein sun lo, sun lo!"* (Vikas has arrived! Listen to what he has to say!). The chant played on the word *"vikas,"* which in Hindi, is both the word for development and a given name. Once a large enough crowd had gathered around the troupe, the character "Vikas," who was development personified, entered the stage. This character wore a sign slung over his shoulders. On one side it showed the satellite photograph of an informal settlement, and on the other, a print out of the settlement from the existing development plan where it was simply marked as a large white square (See Fig. 110 A and B).

Vikas then stood with the troupe lined up around him in a circle and began asking them to identify their houses on the satellite image. The actors would trace their fingers over the picture while saying, "Look, there is our tree, there is our neighbors house… and this here, this is my house!" Once this house was located, Vikas would promptly turn around and ask the actor to identify their house in the development plan. The actor would then be confused and surprised that their settlement was depicted as a blank square. After several members of the troupe had demonstrated this interaction with the two images, another member marched up to the center to shout, "If you cannot find yourself in the development plan, then it means that you do not exist for the state!" This, they would go on to explain, not only exposed the settlement to the risk of displacement, it also effectively meant that the state had no reason to provide the settlement with infrastructure, or a legal means to allow them to access a right to permanent housing through the Slum Rehabilitation Authority. The

play concluded with an announcement that since the Municipal Corporation was *in the process* of redrawing the development plan, now was the ideal moment to assert their claim over the settlement and to have it notified on the plan in order to be recognized by the state.

Figure 96 A and B: Student workers from YUVA staging a street play in informal settlements. The actor dressed as "development" has a picture from the Development Plan on one side and a satellite image on the other.

In this final section of the dissertation, I look at the different kinds of risks and potentialities opened up by images that are in the process of being drawn. Within visual anthropology, images have been theorized in different registers. As material artifacts, they possess specific possibilities and capacities. Images, such as photographs, are posited as both mediators and agents in the complex relations between humans, non-humans, institutions, and things.[341] Images, in writings by Pinney, Davis, and others, possess rich social lives in terms of how they circulate or are seen, and enter into relations with other images and objects.[342] Poole emphasizes the need to go beyond the image's content and to examine the methods and technologies of its production, the conditions of its consumption, ownership, exchange and the fluid relations that produce a visual economy. Within these rich and diverse texts, the image is always characterized (perhaps not directly) as militating against some kind of "wholeness," or rather, tending towards the world with a certain "openness." Even the sensory embrace of images tends towards the open, and it is this fragment like quality of the image that leaves room for appropriations, and new interpretations; it allows the image to be alive.[343] At the same time, the image is never described as being *incomplete* in any way, but rather, it is inherently open. Several examples in different chapters of my dissertation demonstrate this quality of the image and the fluid lives and relations it comes to occupy, and the economies that form around images such as cartographic maps. For instance, in Chapter Four I looked at how older colonial illustrations and photographs of cultural stereotypes were appropriated by the Kolis to claim a native identity. In the same

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341   Edwards, Elizabeth and Janice Hart. 2004. Photographs as Objects. In, Edwards, Elizabeth, and Janice Hart. *Photographs Objects Histories: On the Materiality of Images*. Routledge.
Latour, Bruno. 1999. *Pandora's Hope: Essays on the Reality of Science Studies*. Harvard University Press.
342   Pinney, Christopher. 1997. *Camera Indica: The Social Life of Indian Photographs*. University of Chicago Press.
Davis, Richard H. 1999. *Lives of Indian Images*. Princeton University Press.
343   Mitchell, WJ Thomas. 2005. *What Do Pictures Want?: The Lives and Loves of Images*. University of Chicago Press.

chapter, I looked at how these photographs were combined with other images to lay a claim over land. In Chapter One, I showed how the 2011 CRZ laid the foundation for the emergence of a visual economy organized around cartographic plans of the coast. However, this ethnographic encounter points to the risks and potentials opened up by an image, particularly a plan, in the making; i.e., in its incompleteness.

The members of the play and the workers at YUVA emphasize the need to recognize these risks and opportunities of a plan in the making. These risks, uncertainties and potentials are tied up with the plan as a bureaucratic instrument and document. Edney's formulation of the cadastral surveys conducted in Mumbai the early 20th century as "palimpsests" of the city, is very telling in that it describes the ways in which these drawings are deeply related to the built form of the city. Thus, the possibility of the drawing opens up the possibility of things to come. I also described these possibilities and risks in Chapter Three where I looked at the threat of displacement opened up by the 2011 CRZ. It is when the surveys are announced that there is a whole series of political actions, collection of documents, and visual practices undertaken to claim specific identities in order to be surveyed as a specific population or category.

This moment of making a plan produces a state of anticipation and anxiety, and is rife with ideas about the possibilities and threats to come. Vincanne et. al. describe anticipation as "an affective state, an excited forward looking subjective condition characterized as much by nervous anxiety as a continual refreshing of yearning, of 'needing to know.' Anticipation is the palpable effect of the speculative future on the present."[344] Plans and images that are published on the other hand, operate and open up different

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[344]   Adams, Vincanne, Michelle Murphy, and Adele E. Clarke. 2009. "Anticipation: Technoscience, Life, Affect, Temporality." *Subjectivity: International Journal of Critical Psychology* 28 (1): 246–65. doi:10.1057/sub.2009.18.

concepts of risks and possibilities. Incomplete images, or images in the making possess open up potential in two different ways. On the one hand there is the act of making that is itself improvisational and unfolds upon the sheet of paper, akin to what Ingold describes as a state of "walking."[345] They also open up the possibility of taking action before zones, land uses, housing, commerce, infrastructure are "finalized" through the act of publication. Once published, maps and plans do offer possibilities for action, but these actions occur in different circuits and through different routes– through the ways in which document circulate in departments, by collecting previous versions in order to petition a revision, or by finding other documents that dispute the plan. Each of these moments and states of a plan or map – as a drawing in making, as an impending survey, at the time of publication, at the time of revision, as a bureaucratic document – opens up a range of possibilities and risks. It is when a plan or map moves between these different states that it offer the potential for action and draw in communities such as the fishers into itself.

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[345] Ingold, Tim. 2007. *Lines: A Brief History.* Routledge.

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