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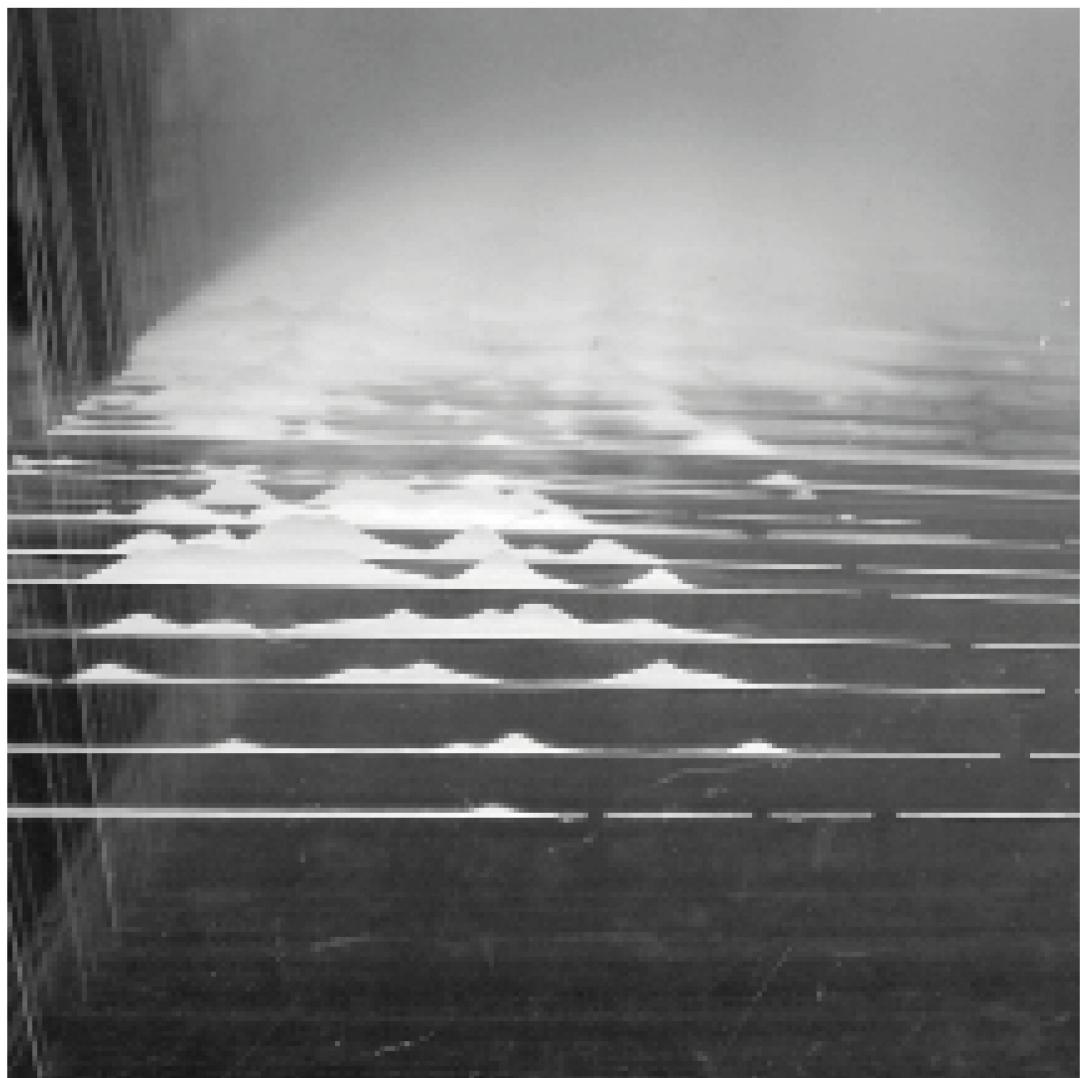
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Model of "Mumbai in an Estuary" from the SOAK exhibition held at the National Gallery of Modern Art, Mumbai (2009) and produced in collaboration with Ram Sinam (Trapeze)

TERRAINS OF WETNESS

Anuradha Mathur

In the many terrains of wetness that Dilip da Cunha and I have engaged as designers, scholars, and teachers, we are driven to question the vocabulary of landscape taken for granted by professionals, administrators, academics, and the people it serves. It is a vocabulary which we believe grows from the way places are imaged and imagined. In particular, our work has been concerned with what we call the “lines of separation” at work in this language. We are referring to lines drawn in maps and master plans such as those between land and sea, settlement and river, urban and rural, formal and informal settlements. These lines are subject to artistic representations, scientific inquiry, infrastructural engineering, city planning, political maneuvering, and landscape design with little attention given to the act of separation that brings them into being. They tend to harden on the ground and in the imagination, becoming part of the ordinary and everyday landscape. Questioning these lines has raised simple but fundamental questions for us: Is water everywhere before it is somewhere? Is the Mississippi a river or a landscape? Is Mumbai an island or an estuary? Is Bangalore a city or a field of intersecting trajectories? Is Virginia bounded by a coastline or is it a field of gradients? Do rivers exist by design?

Our inquiries into these questions have led to alternate grounds for imagination and visualization; they have opened up new possibilities for design. Over the years, particularly in the deltas and estuaries we have engaged, we have been committed to drawing out the fluidity of these grounds and demonstrating their potential resilience. Even as we negotiate boundaries in the face of enforced limits, we seek to construct gradients rather than blur lines, and accommodate in time what cannot be accomplished in space. While the process of our work has not been linear, guided at times by the need to reframe larger questions and at others by opportune projects and sudden events, over the years we have developed modes of engagement through site-based inquiries, archival and studio-based work, public exhibitions, and demonstrative projects that preceded or coincided with the books that we published. In this essay, we offer a glimpse into these practices that engage the ambiguity, complexity, and open-endedness of terrains of wetness.

Reframing the Question

Looking back at concerns that have shaped our collaborative work since we began our travels of the Mississippi landscape in the late 1990s, we find threads of continuity, emergent frameworks, lingering questions, but also new insights and areas of inquiry that have pushed us to reformulate and reimagine the agency of lines dividing land and water, and the design opportunities that this renewed seeing may unfold.

Mississippi Floods: Designing a Shifting Landscape called attention to the role that representations of a river played in turning the Lower Mississippi into a landscape of flood with levees, cutoffs, revetments, spillways, and a host of other constructions. It led us to question for the first time lines on a map that separate land from water, lines that define the Mississippi not as a landscape shaped by processes that extend in time and space but as a river with a prescribed length, breadth and depth, and with specific east and west banks, all of which are then engineered and maintained. Dilip da Cunha and I have long asked, Why do rivers flood? The simple answer is that they flood because water crosses a line drawn by humans. As such, a flood cannot be a natural event, let alone a natural disaster. Over the years, our interest has turned from a line transgressed to a line invented. It is an act of design.

Our travels through the lower Mississippi landscape, which began five years before Hurricane Katrina devastated New Orleans, took us through places defined by the measures of flood, but also places of material richness and depth which did not always conform to the lines that were drawn. We saw two paradigms at work, or rather two Mississippis: one that floods and flows (articulated by levees) and one that rises and falls (anchored by Indian mounds); one built on lines intended to divide land from water and one built on shifting horizons. These paradigms are not confined to the Mississippi landscape. In fact, they remain in conflict in many parts of the world.

SOAK: Mumbai in an Estuary, which followed five years later, was triggered by the devastating 2005 floods in Mumbai. We felt compelled to make the argument again that the floods which recur with each monsoon are neither natural nor the result of failures in engineering infrastructure or civic management; rather, they are a consequence of visualizing Mumbai as an island drained by rivers that flow to the sea. This vocabulary of landscape, which once again reaches back to enter-

prises from a colonial era, encourages a battleground between “island city” and the combined forces of monsoon and sea. The latter “opponents” are treated as outsiders in a place where they have, in fact, for centuries surpassed insiders in both rain-holding and backwater systems. SOAK proposed that Mumbai be imaged in an estuary rather than on an island, making it a place where monsoon and sea are once more considered local residents. While the plan view of maps celebrates the islands of Mumbai and situates the sea beyond land’s edge, sections can signal a sea that is beneath, within, and permeating land through aquifers, which are known to offer Mumbai citizens brackish water much farther inland. Here landfills, causeways, and walls do not keep the sea out; they merely prevent it from surfacing in a game of pressure, saturation, and porosity that is played in depth. In this estuary, not only rains from above and flows on the surface generated the 2005 flood; it resulted as much from the saturated and permeated ground below.

Introducing a sectional reading of Mumbai, a place predominately perceived in plan, transformed our consideration of site and, by extension, habitation itself. In contrast to seeing projects defined by island-like land uses (enclaves within enclaves), themselves governed by a phasing logic and master plan end scenarios, we saw projects as anchors among open trajectories of movement, thereby embodying multiple temporalities.

This sensibility has allowed us to inject the topic of design into conversations about climate change. We are interested in testing and demonstrating the role that design can play in the face of these imminent challenges—particularly for estuaries and deltas—and sharing our insights, which challenge the visualization of a coast as a line. In 2012, Hurricane Sandy caused much damage to the east coast of the United States, momentarily erasing the coastline that had been plotted so meticulously in maps. However, it also situated recovery efforts in the context of sea level rise. Our project Structures of Coastal Resilience, funded by the Rockefeller Foundation, was not aimed at building projects in the immediate, but rather at bringing landscape architects and designers to the table to influence and expand how the US Army Corps of Engineers might think of resilient design in the future. From the start, we were compelled to distinguish between two types of resilience. The first type signifies a recovery from disaster.

This resilience can be quantified because recovery marks the return to a known state. The second type of resilience would involve not suffering from disaster to begin with. This type is difficult to quantify because it moves into the unknown and calls for systemic thinking. Earlier on in the process we figured that this pro-active sense of resilience required a different attitude toward the coast. Consequently, we re-imaged the coast not as a line but as a fractured, cumulative, and diverse field of ecological gradients structured by what we termed “fingers of high ground.” This visualization, designed to accommodate unique ecologies and economies that work between fresh and salt water, displaces the commonplace imaging of the coast as a line that limits the options of design to either defence or retreat, both of which are difficult choices in many parts of the world.

Three years ago we began work on what may be our most ambitious project yet: imaging and imagining *Ganga*. Popularly translated as the Ganges, this natural phenomenon is imaged as a river confined by lines that channel water from point source to sea. On this basis, it holds a prominent place as a river of civilization, as one of four rivers of paradise, and, of course, as a sacred river venerated by millions. But it has also been put to work in the service of land to become overexploited, terribly polluted, and critically endangered. In view of this, we are working to introduce a new imagination of *Ganga*—as rain before river, a ubiquitous wetness with a source in monsoon clouds and a destination in a nonlinear ground of holdings and overflows. We have begun to pursue this project on a number of fronts, most significantly toward a public exhibition for which we undertook many traverses from the Himalayas to the Sundarbans, working with various media, including drawing, staining, and photo- and video-works. The exhibition follows da Cunha’s forthcoming book *The Invention of Rivers: Alexander’s Eye and Ganga’s Descent*.

Rain is not merely a moment in the water cycle; it is a moment that is home to a unique imagination, understanding, and design of human habitation, a moment in which ground is not characterized as land separated from water but rather as a field of wetness. Seen this way, as the book encourages, a “rain terrain” is distinguished fundamentally from the more accepted reading of the earth surface, which occurs in another moment of the water cycle when water can

be assumed to be separate from land. Da Cunha refers to this moment, and the visualization it makes possible, as a “river landscape.” This landscape has proven a tremendous success, generating great wealth and inspiring remarkable ideas such as city and civilization. However, river landscapes do not work everywhere and particularly not in places of the monsoon such as India. Here, rivers flood with devastating effects, they run dry, are terribly polluted and increasingly contested. Our exhibition will elaborate on the difference between a river landscape and a rain terrain. Essentially, it asks if India and the entire monsoon belt, which until recently was colonized and is now in a “developing” mode, are better served by a design imagination that derives from the holding of rain rather than the flow of rivers.

Like our earlier collaborations, this exhibition draws on da Cunha’s ability to conceive and unpack complex ideas and practices, to open new imaginations, and my ability to pursue an inquiry that begins in material engagement and artistic practice. Together, we have been able to break new ground through writing, imaging, designing, and teaching.

Visualizing Terrain

The questions and concerns that have guided our work and pushed us to reframe given sites, situations, or problems, are inextricably linked to processes of making and moments of discovery where the act of walking, drawing, printing, photographing, sectioning, staining, splicing, and writing allow for alternative formulations of landscape to emerge. It is an approach that is also central to our teaching. Among the methods we have developed in our teaching and research practice, we will elaborate here on those central to investigating site: traversing, layering, sectioning, notating, but also exhibiting, which is crucial to the design activism we embrace.

Traversing

To traverse is to walk in appreciation of what Henry David Thoreau called “wildness”—a terrain where boundaries become blurred, properties recede, and another’s guidance is suspended. In this amorphous world, one is compelled to plot a unique ground, a ground on which things emerge, gather, and extend. This ground is not exhausted in its readings and can be walked differently each time.

Traversing is, then, an act of both transgression and creation. It provides a landscape vocabulary, a vocabulary by which a terrain is measured, its story told, and its condition transformed. At the University of Pennsylvania, we introduce students to the concept of unfolding and transforming places in time and through their own movement in their first semester of the landscape architecture program. The studio builds on the premise that the act of surveying and measuring already holds the seeds of design. In other words, we believe that design begins with how we stride, how we draw, and how we measure landscape. In the course of the semester, while pursuing site investigations and design as an emergent and layered process, students become familiar with conventions in landscape architectural drawing and representation, but also with the possibility of probing inherited ways of seeing toward new forms of visualization and critique. An important aspect of these traverses is the underlying awareness of wetness and the opportunities that it brings to new visualizations of terrain, design imagination, and design practice.

In our own traverses of the Mississippi landscape we were driven to not merely look at the Mississippi River differently but to find different Mississippis that existed simultaneously in a landscape defined by an amorphous wetness rather than a terrain divided between river and land. While at the time we may not have been as aware of it as we were in later works, it was with this disposition that we photographed, drew, dug into histories, rummaged through archives, pulled screen prints, and wrote.

Layering

While traversing through sequential drawing, sectioning, surveying, and photographing can open distinct and discrete methodologies, techniques, modes of presentation, and creative possibilities, traversing can also be seen as a process of layering in which each successive traverse builds on the last. In this way, through layering we accumulate a sense of territory, materiality, history, and diverse measures of place.

After completing *Mississippi Floods*, we were often asked about the program and printers we used to make the prints in the book. The inquiries helped us to see more clearly that each print was not just a representation of a landscape or a collage of images but an analogous

construction with both a thickness and a materiality. While each screen print gathered a series of drawings, marks, diagrams, found images, and texts around a topic that opened up a particular Mississippi—its making was left to a process of negotiation and improvisation. There was freedom and there were choices to be made along the way, and there was a precision necessary in the registration of layers, the handling of paper, and a skill and strength in pulling a print. We learned quickly how color is relative—that the same grey is brown against a blue and blue over a warm hue—so we could not premix colors and needed to negotiate each layer in relation to the one that came before—ten or more by the time the print was done. Each layer of ink, with its own viscosity and wetness, made visible new images and ideas, but it also buried others in a process of sedimentation and erasure. The laying down of each layer of pigment echoed for us the geological and geomorphological processes captured so vividly by the geologist Harold Fisk in his famous drawings from the *Ancient Courses, Mississippi River Meander Belt* published in 1944.¹

Sectioning

To scientists in the field, a section is a line of investigation. To Patrick Geddes in the early 1900s—and to ecologists thereafter—it was the valley section, a line “drawn of that general slope from mountain to sea which we find everywhere in the world. This we can readily adapt to any scale, and to any proportions, of our particular and characteristic range, of hills and slopes and plain.”² To section is to gather clues, indications, qualities, and traces of the area along a line; it is also to pull to the surface a world from above and below. A section is a meeting of earth and sky. Gathered in sequence, sections can construct rhythm, depth, and a sense of time as they unfold diverse conditions across a territory.

Juxtaposing a plan view of Bombay, featuring the city as an island where land is distinct and the sea absent, against a sectional reading of Mumbai, which situates it in an estuary where the sea is present, enabled us to distinguish between two starting points for design—one

1 Harold Norman Fisk, “Ancient Courses, Mississippi River Meander Belt, Cape Girardeau, Mo.—Donaldsonville, La.”, in *Geological Investigation of the Alluvial Valley of the Lower Mississippi River* (1944).

(Vicksburg, Mn: Mississippi River Commission, 1945), *Atlas Plate 22, Sheets 2, 3, 7, and 9.*

2 Patrick Geddes, “The Valley Plan of Civilization,” *Survey* 54 (1925).

that places water somewhere and one that considers wetness everywhere. The cutting of each of the 159 sections by da Cunha—every time he came across the footprint of a former reservoir that dotted this landscape before piped water became the norm—was crucial to this endeavor. The many subtle decisions that went into the drawing's making worked to dematerialize the coast as a line and transform the flattened reading of Mumbai that is entrenched in the public imagination. This sectional drawing inspired the visualization of a series of demonstrative projects that constructed found and proposed conditions. In these propositional drawings, however, sequential sections built on photowalks (rather than based on a map) to construct terrains through movement, relational proximities, and adjacencies rather than geographic distances. In place of a divided ground, these drawings build an appreciation of gradients, rhythms, and practices in time.

Notating

An underlying thrust in our work has been an engagement with time—in how we inhabit and document landscapes, and in how we consider design. Over the years, we have become less interested in drawing out shifting landscapes that image time in terms of space, and more in imagining space on the basis of time. This has led to explorations of notational systems and what we refer to as “plots” and “analog” that allow us and our students to construct temporal, material, and dialectical investigations of site.

Sequential photographs that capture temporal rhythms in contrast to a few tightly framed views continue to be an essential part of our traverses and investigations of time. In particular the photo-sections—photographic sequences that cut across time and space with rhythm and purpose³—of Mumbai pushed these boundaries. They unfold multiple readings of time, including the time of us moving, the time of things moving, the time of practices, the time of the monsoon, a moment of waves, and time embedded in the layers of basalt, etc. While these photo-sections construct a fluid portrait of Mumbai as an intersection of multiple times, materials, and movements, our photo-

³ Excerpt from the image index in Anuradha Mathur and Dilip da Cunha, *SOAK: Mumbai in an Estuary* (New Delhi: Rupa Publications, 2009).

walks—*assemblages* that gathered moments, horizons, rhythms, and adjacencies of particular terrains—become generative in constructing new grounds of design. The development of a notational language that complements sectional transformations and plan armatures enabled us to find a lot of space in Mumbai on the basis of time, and to propose multiple starting points and times of design in place of a master plan, holdings and overflows in place of perennial flows, and material practices in place of programmed space.

Exhibiting

We represent an activist practice. For us, this means that we ask the first question, frame the issue, and propose possibilities. Our purpose is to affect change, from policy to pedagogy right down to how people image and imagine their environments. A critical component of our activist practice is the visualization of landscape—how landscapes are seen, drawn, and imagined. Visualization underlies history, geography, politics, and policies, and of course design and planning approaches as well. We question the assumptions and limits of the visualizations that we have inherited. So our activism looks quite different from the more common design-build activism. For us, the questioning begins very early, before the project is shovel-ready. It begins with preparing the ground, which will someday be shoveled—and not just the physical ground, but also the conceptual ground, which provides the necessary space for discourse. This is why we work through public exhibitions, for it is necessarily an artistic enterprise, particularly if we are to challenge entrenched paradigms. Here we do not see art as opposed to science, or art representing science—we see art as informing, even leading science.

Our lexicon of drawings, screen prints, map-prints, photo-sections, sectional drawings, and notations continues to construct a trajectory of landscape documentation and design thinking that privileges time, depth, and horizon over space, surface, and boundary. An underlying thread in much of our current work is a concern for how wetness is visualized and engaged in ways that do not lead to conditions of excess or scarcity, but rather to opportunities that test ambiguity as a catalyst for reinvigorating design imagination and practice.



A devastated site at 1815 Jourdan Avenue in the Lower Ninth Ward of New Orleans after the storm surges produced by Hurricane Katrina breached the levees.