

THE RIVER AND THE REAL WORLD



CORNELL STUDENTS BRING VISIONS FOR CLIMATE ADAPTATION DOWN TO THE HUDSON SHORE.

BY JONATHAN LERNER

TOP

Ossining's narrow waterfront evolved as a mixed-use zone, without master planning.

INSET

Josh Cerra, ASLA, far right, and the 11 students from last fall's Climate-Adaptive Design studio.

The Hudson River is tidal, gaining a mean elevation of only two feet for 150-plus miles inland from the Atlantic. It is flanked, almost without interruption, by bluffs and cliffs. Most communities along it have only a slender strip of land at river level. Historically, industries and infrastructure were sited below, with more salubrious parts of towns built up the slopes. Most industry is gone. Communities want to reinvent their riverfronts, which means contending with

the tides and storms of a changing climate. They're getting help from Josh Cerra, ASLA, the director of graduate studies in the Department of Landscape Architecture at Cornell University. With collaboration from the New York State Department of Environmental Conservation's Hudson River Estuary Program, he has been bringing community-based "Climate-Adaptive Design" studios to Hudson River towns.

The studio has obvious pedagogical value. Students learn site research and engagement skills, and to imbue design with climate science. Meanwhile, it lets Cerra pursue an interest in applied education and cross-disciplinary experiences. In developing their concepts, his students get "consultants"—other students, from Cornell's Department of Bio-

logical and Environmental Engineering. To assess the studio's benefits, Cerra is collaborating with a Cornell researcher who studies behaviors and conservation management. Their inquiries, he says, include "how working with engineers or other technical partners may enhance learning innovation" for landscape architects. And then there is the studio's value to the towns, which are gifted with provocative visions for their futures.

This past fall, Cerra's studio—11 third-year MLA candidates—focused on Ossining, on the east shore of the Hudson about 30 miles north of Manhattan, where the topography is especially steep. A rail line to the city traces the bottom of the bluff. Circulation on the waterfront and to the town center is constricted. Only

JOSH CERRA, ASLA, TOP; KEVIN KIM, BOTTOM

OSSINING WATERFRONT

-LIZ FABIS, STUDENT ASLA



CURRENT CONDITION

two streets cross the railway, over narrow viaducts. On the river side, a single street parallels the tracks; its sides are often crammed with commuters' cars, more like a parking lot

than a right-of-way. Visual chaos is accentuated by a lot of vine-tangled, rusted chain-link fencing.

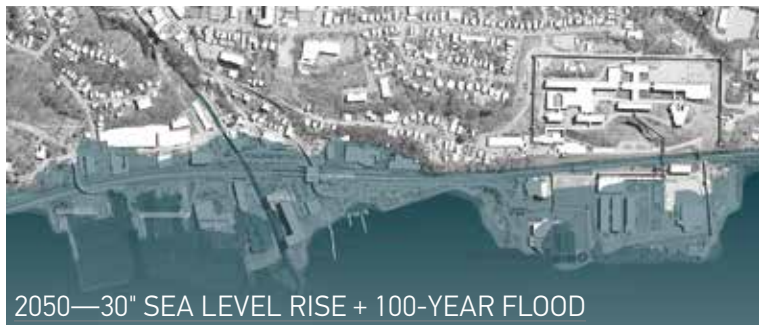
The land-use mix in the roughly mile-long study zone between the tracks and the river is typical. Vestiges of industry remain: a working oil transfer facility, a historic, if architecturally unremarkable, brick factory building. There are a couple of restaurants and private marinas and a wastewater treatment plant. Several features are not so typical of Hudson River towns, including the original compound of the famous Sing Sing state prison; it's barely used since the facility expanded uphill, but still off-limits and taking up space. There is also the dock for a cross river ferry, one of only two now regularly operating north of New York City. And at the water's edge stands a 188-unit apartment house completed in 2016. About a third of a mile of shoreline is composed of two parks separated by a public boat club and launch. These spaces give a glorious view toward the steep wooded ridge two miles

away on the opposite shore. One park, quite small but in good shape, was built along with the apartment building; the larger one, an acre, is uninspired in design, run-down, and at one point narrows to the width of a single footpath. During Hurricane Sandy, in 2012, the storm surge at Ossining was about nine feet, and nearly all of the current waterfront including the rail line was flooded. (Using the FEMA terminology for describing flood events, Sandy would be considered a 1 percent or 100-year storm.)

The semester in Ossining was the studio's seventh iteration. Early on, selection of locations was fairly informal. In fall 2015, the first was conducted in Catskill, just across the river from Hudson, where I live. I went over to view the students' final designs, met Cerra, and brought him back to see our waterfront. Like that of just about every town along this magnificent river, Hudson's waterfront is both daunting and enchanting. He was enchanted, but



100-YEAR FLOOD



2050—30" SEA LEVEL RISE + 100-YEAR FLOOD

ECO-LINE, DEFINING THE NEW WATERFRONT

MAIN PLAN—2050
—ZIKUN ZHANG

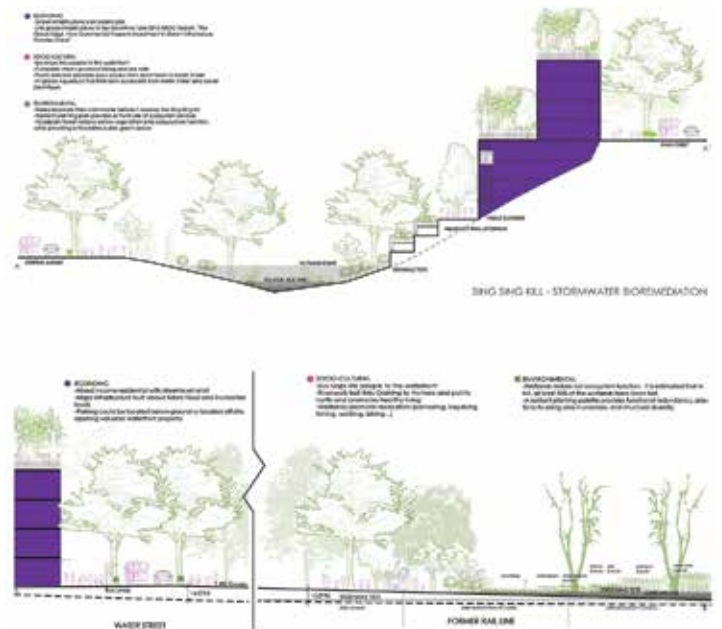


ABOVE
Zikun Zhang's concept envisions circulation on boardwalks that will appear to float as waterfront transitions to wetland.

TOP RIGHT
Mark Shrader proposes cut and fill to leverage higher ground as a line of defense.

STEP BACK, STEP UP, MOVE FORWARD

—MARK SCHRADER



undaunted. I offered to organize local support, and Hudson became the next venue.

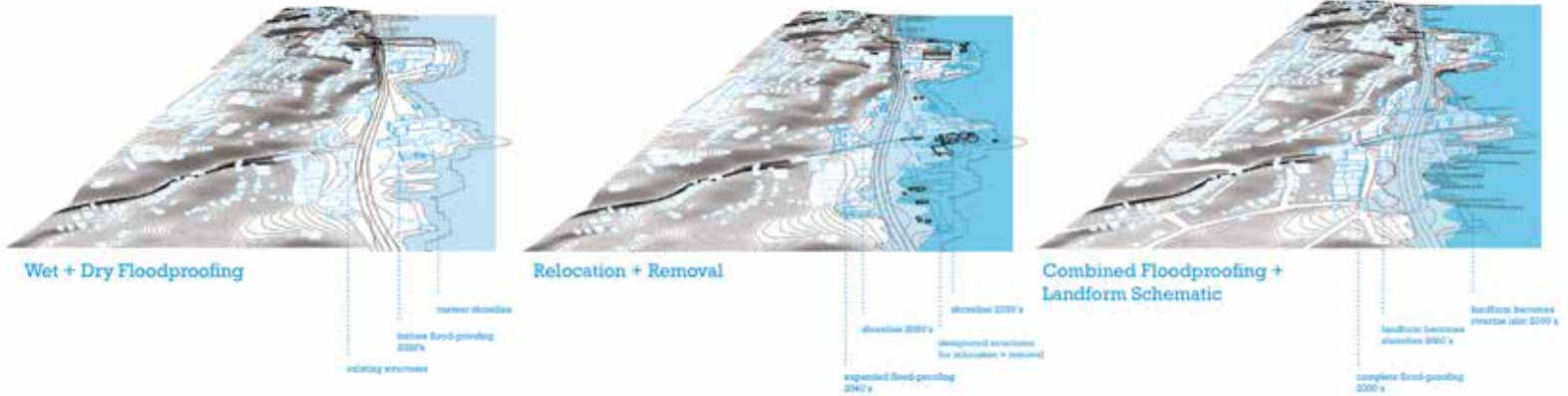
Nowadays, Cerra and the Estuary Program select towns not just for their waterfronts' interesting challenges and potential but also for communities' demonstrated progress toward wise planning. They solicit candidate venues with a detailed request for applications and a preapplication webinar. Once a locale is chosen, but before the students' first visit, there are meetings with officials to identify key resource people and waterfront issues. Local participants now receive a 12-page guide describing the studio process, expectations for their involvement, and suggestions for leveraging the studio to stimulate planning momentum. After it ends, the Estuary Program follows up to keep the student propositions active in the local conversation, and publishes a "lookbook" for mass distribution of projected local climate-change

impacts and the students' ideas. Last year the state issued an RFP for a consultant to help one town take elements from the studio proposals and move them toward implementation, offering a \$125,000 fee. So strong was the response that they ended up making two such awards for concepts devised during studios held in Kingston and Piermont.

(I use "town" here generically for anywhere the studio has focused, because New York legal terminology is confusing. Every place in the state is either a town—think township—which can contain municipalities called villages, or else it is a city. Hudson is a city, but of fewer than 7,000 residents. The Village of Catskill, population 4,000, is in the Town of Catskill. The Village of Piermont, population 2,700, is in the Town of Orangetown. The City of Kingston has 24,000 people, and hosted the studio three times. Ossining is a town of 40,000 within which is

TRACING PLACE; SHIFTING SHORES

—MARCO RANGEL, STUDENT ASLA



ABOVE
 Marco Rangel, Student ASLA, sees "using the manipulation of topography to trace shifting shorelines."

BELOW
 Lingyi Hsu would elevate the rail line above floodable parkland.

A LATENT BUFFER FOR OSSINING

—LINGYI HSU

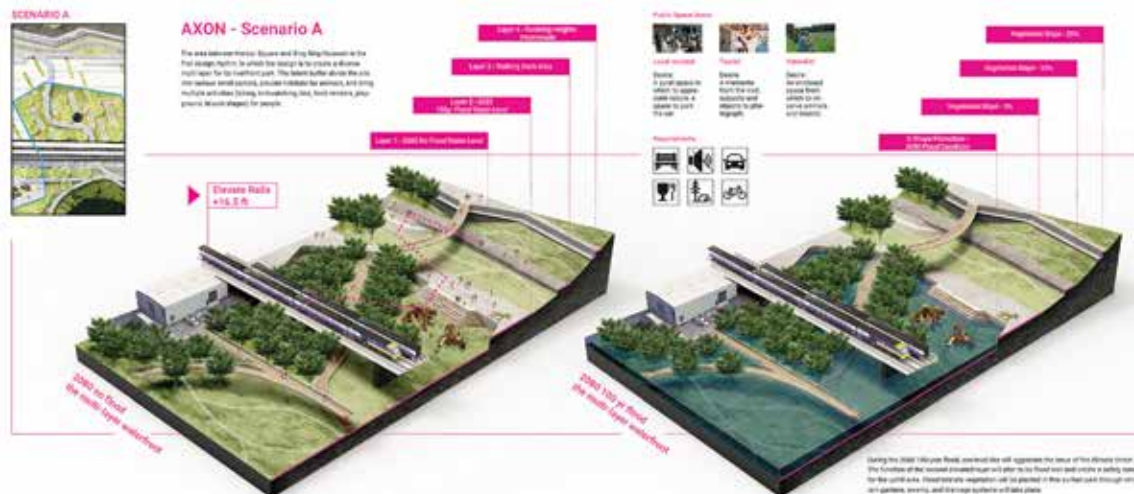
the Village of Ossining, a dense core including two-thirds of that population, the commercial center, and the waterfront.)

The Town and Village of Ossining already had a strong record of initiative and collaboration on planning. Their joint letter of interest detailed current efforts. Those included, for the town, a new comprehensive plan with a sustainability and complete streets orientation, and a new master plan for the larger waterfront park, both in process. The village was moving forward on updating its comprehensive plan: inserting a mixed-use and mixed-income housing project on a moribund site just

inland of the tracks; extending the ferry pier to accommodate larger boats; and facilitating development of rental housing on sites next to what became the study area. A planned link to a statewide bike and pedestrian trail network would connect the riverfront and the upland business district. There was excitement—barely contained by the official tone of the letter—about the imminent opening of the Sing Sing Prison Museum in two historic structures, the facility's former powerhouse and an 1825 cellblock. These projects and others, still fluid, meant that the studio could expect informed local engagement—and perhaps influence what got built.

Ossining was certainly aware of sea-level rise. Local regulations had been modified recently to address future flood events. The design of that apartment building was altered after Hurricane Sandy in 2012, when a bulkhead built to prepare its site was overtopped by storm surge. Still, people in river towns may not fully visualize the anticipated severity of local impacts. They are, though, likely to be aware of local obstacles to change. Those might include political discord and lack of planning capacity, but also facts on the ground like valued historic sites or, ironically, recent investments—such as Ossining's new apartment building and the museum, both intended to animate the waterfront, or its wastewater plant, which recently had nearly \$15 million in upgrades.

The students do become aware of such particulars. But they are involved in a learning exercise, using newly acquired design skills to dream up concepts. They are not constrained by politics and budgets, as they will be when in practice. So their concepts can seem abstract or radical to people in the towns. Even so, Cerra says, the proposals "inspire conversation about what they're interested in and what resources they can bring to bear to push some of these ideas forward.





ABOVE
Catherine Kana's plan draws focus to the confluence of Sing Sing Kill (creek) and the Hudson with a water-themed park and pedestrian plaza.

That's building capacity, right there." Still, raising awareness of risks and offering possible responses is not the same as actually building something to adapt a threatened waterfront. "We learned about setting up that expectation. You know these are not going to be constructible when we get to week 16."

At semester's end, the students presented their concepts publicly at the Ossining library. All depicted enhanced access to the waterfront, with some vision of resculpted shoreline and floodable parkland that would evolve with rising waters. Where the concepts became unnerving was in addressing those big facts on the ground: if, and when, to dismantle the apartment building; and how to defend, or relocate, the wastewater plant. The third rail, so to speak, of all challenges was the train. Some students suggested elevating it by six feet on a berm or by 16 or even 30 feet on a viaduct; tunneling it under

RIVER GUARDS

—CATHERINE KANA

the raised grade of a terraced park; or rerouting it altogether, inland alongside a highway. But the tracks hug the shore for 150 miles; this cannot be resolved within one community, and the cost of any move is unimaginable. The boldest, perhaps most realistic proposal was to abandon rail for a system of ferries—made feasible, the student designer pointed out, because with warming the river won't freeze over.

Cerra's students had presented similarly in Hudson in 2016, attracting considerable interest. Four years later—blame political discord? lack of planning capacity?—the waterfront remains untouched, the studio a dim memory. Kingston, by contrast, has a planning department, a sustainability coordinator, and an active Conservation Advisory Council of citizen volunteers. Last October the city organized "Weaving the Waterfront," a walking, biking, and boating tour of 10 current recreation and resilience projects. They included the studio proposal funded for further development, which would create a living shoreline of tidal wetland and beach. While Piermont has the smallest population of the studio towns, it has outsized capacity: the highest average household income—nearly three times that of Catskill or Hudson—and a Waterfront Resiliency Commission established following Hurricane Sandy (whose members include the Columbia University climate-change expert Klaus Jacob). Funding further development of a studio concept there seems an equally good investment.

Graham Harlan Smith, now an assistant landscape architect at the New York City Department of Environmental Protection, was a student in Cerra's Hudson studio. "A lot of academic work, you can get off into fantasyland. It was grounding," he recalls of the public engagement aspect of the studio. "You see that there are parameters you don't necessarily get from an academic setting—like, anything that's too radical might be good for visioning but might not get much mobility. Practicalities about more than physical constructability, but 'What can a social unit achieve?'" Smith, an Ossining native, attended all the public events of the recent studio there. "What struck me was how diverse the students' projects were. There's utility for the town with that, a variety of ideas to explore. But it's a gnarly waterfront. There's a lot going on down there that is beyond the power of a local municipality."

As the Ossining studio concluded, the village was interviewing to hire a professional planner, and the urgency of shoreline adaptation was broadly agreed upon. "We have a lot of issues to contend with as the Hudson starts to rise," the Town Supervisor Dana Levenberg told the students that day at the library. "Thank you for helping us understand how to take an active role in planning. Of course, this is just a start." ●

CONTRIBUTING EDITOR JONATHAN LERNER SLOSHED AROUND THE CITY OF HUDSON'S WATERFRONT WHEN IT, AND THE RAILROAD TRACKS, WERE UNDERWATER.

CATHERINE KANA