

Composing Chaos

Nathalie Miebach transforms scientific data into wondrous sculptures and scores.

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In her latest work, Nathalie Miebach has added another dimension – sound. “The point, really, is to hear the information,” she says.

Violist Dimitri Murrath plays a score generated from weather data.



OF ALL THE IMAGES OF THE devastation wrought by Hurricane Sandy in 2012, perhaps the most haunting were the wrecked seaside amusement parks: the roller coaster half-submerged in the ocean off the New Jersey shore, the still-standing Ferris wheel overlooking Coney Island in ruins. For Nathalie Miebach, these eerie, elegiac sights captured a conundrum: What compels us to keep building, and rebuilding, on sites that are vulnerable to increasingly extreme weather?

“Here was a story, a human conflict, that I found very interesting. To me, it was a metaphor for the human inability, almost, to accept that our climate really is changing,” says the Boston-based artist, 41, whose fascination with weather – how it interacts with environments and affects people – has informed her work for almost a decade. She made a series of Sandy-inspired sculptures, elaborate basket structures she wove by hand in a colorful riot of reeds, wood, bamboo, and other materials. Their wildly intricate shapes suggest carnival rides, full of twists, turns, and whirls, with all the chaos and cacophony of, well, a storm. Though they exhibit a kind of gorgeous madness, there is method to it.

What Miebach does in all her work – which ranges from sculpture to wall pieces to large installations – is take scientific data and render it in tactile, three-dimensional form. In her Sandy series, the ups and downs of a roller coaster correspond directly to wind speeds recorded on the night the hurricane made landfall. Temperature, humidity, tidal patterns, the migratory habits of krill – you name it, Miebach has woven it.

“I stay true to the numbers, in the sense that you can read the weather off these pieces,” she says. “There is a numerical logic, a way of translation, at the root of it all.”

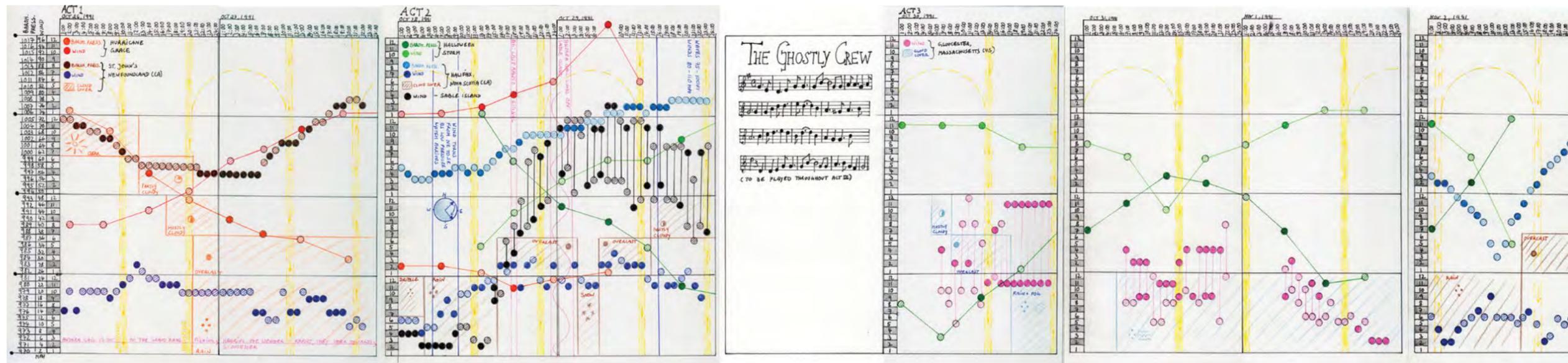


MAPPING METEOROLOGICAL EXTREMES

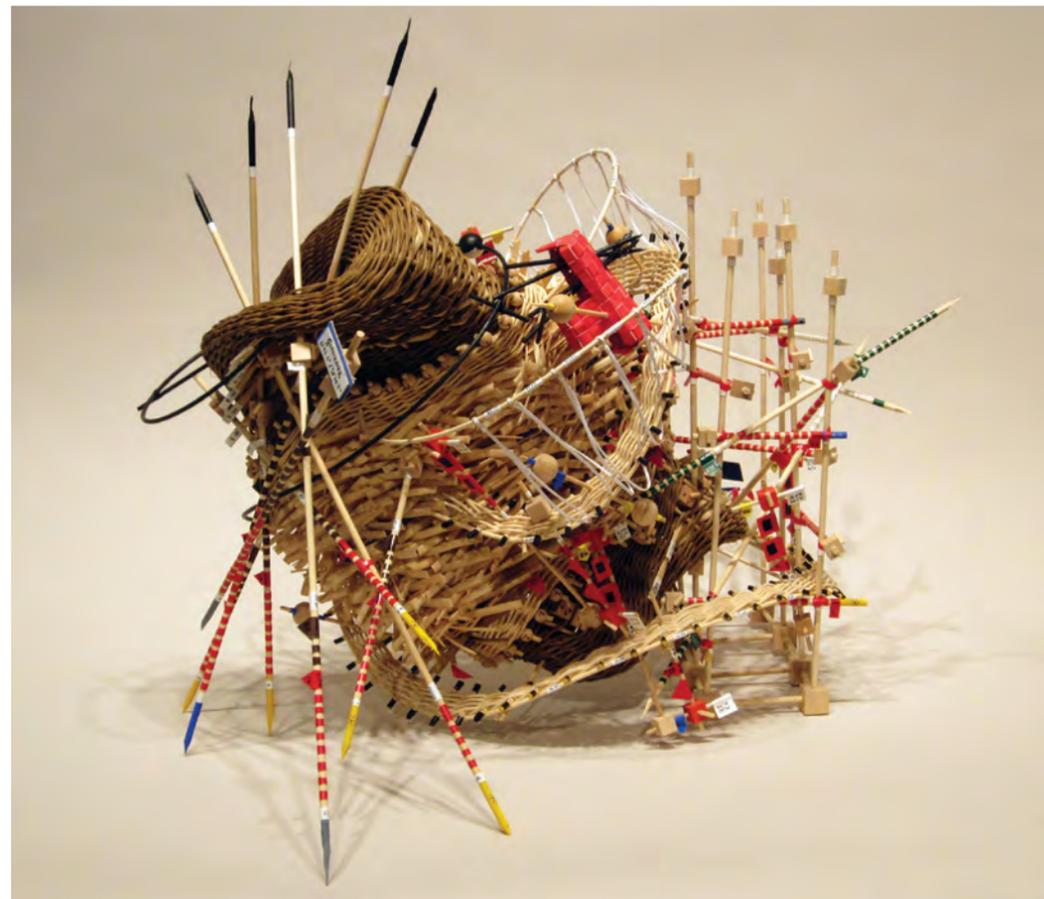
In October 1991, the “Perfect Storm” entered the Gulf of Maine, an extreme meteorological event that sank the *Andrea Gail*. Miebach rendered data from the storm in a reed and wood sculpture (above).

The musical score (below) follows the sinking of the vessel in three acts and is made up entirely of weather data. It ends as the ship, two days overdue, is reported missing, and reality sets in.

The Ghostly Crew of the Andrea Gail, 2011, reed, wood, data, 6 x 3 x 5 ft.



The Ghostly Crew of the Andrea Gail, 2011, score



Photos: Nathalie Miebach

BRINGING SHAPE TO THINGS UNSEEN

The *Andrea Gail* was never found, but the fishing vessel is believed to have gone missing near Sable Island off the coast of Nova Scotia, in treacherous waters known as the “graveyard of the Atlantic.”

It began its final voyage in Gloucester, Massachusetts, en route to St. John’s, Newfoundland. This sculpture (above) translates wind data collected on the night of the storm from those three locations.

And the Winds Kept Roaring Through the Night, 2011, reed, wood, data, 24 x 18 x 20 in.

Research is a big part of Miebach’s craft, especially if her subject is a particular environment, be it stormy Atlantic waters or Midwestern city streets. “In order to truly understand weather, you have to understand the environment as well. And an environment is not an app; it will not reveal itself to you quickly,” she says.

Working for months if necessary, she’ll gather data from weather stations and the internet but also go out in the field, using simple measuring tools and her own senses to take it all in: rainfall, plant and animal activity, cloud patterns, the color of water, how sound travels differently on a humid day. Later she’ll plot her structures in detailed drawings, then do the slow, meticulous handwork that brings them to life.

The results are objects of extraordinary playfulness and wonder. Are they art, or science, or both – or something else entirely? It’s the kind of question people interested in innovation like to contemplate these days. No surprise, then, that Miebach’s work has been attracting attention across disciplines. She won a coveted spot as a Fellow and speaker at the 2011 TED (Technology, Entertainment and Design) global

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Object photos (2): Nathalie Miebach

SEA CHANGES

Changing Waters uses data from buoys in the Gulf of Maine and coastal weather stations to explore the seasonal variations of marine life. The piece was part of an installation commissioned by Fuller Craft Museum in 2011; it has traveled nationwide.

Changing Waters (detail), 2011, reed, wood, rope, paper, data, 30 x 20 x 1 ft.



HURRICANE SANDY
For Miebach, some of the most enduring sights in the aftermath of Hurricane Sandy were damaged rides at Coney Island and the unmoored Star Jet roller coaster in Seaside Heights, New Jersey. The wrecks “became an ominous and emblematic image of changing weather and ocean conditions.”

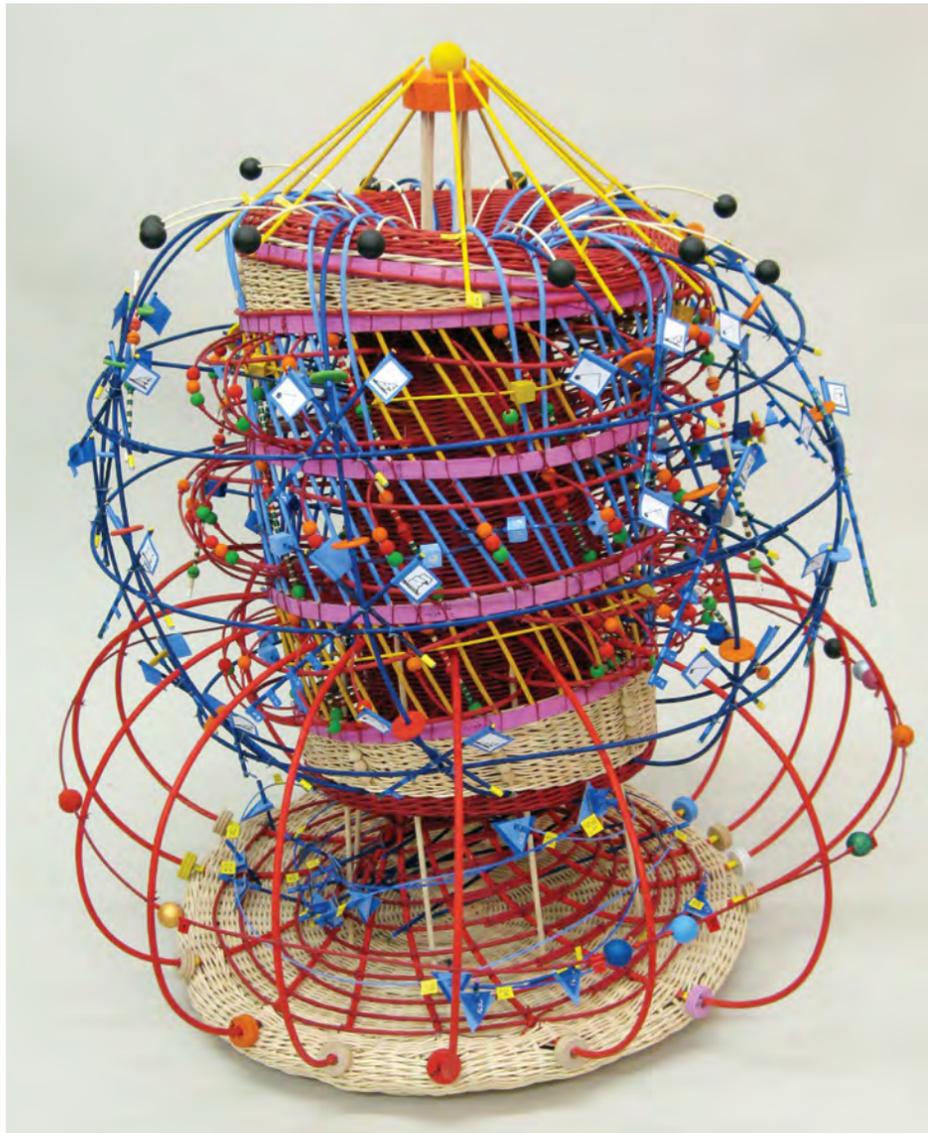
O Fortuna, Sandy Spins, 2013, reed, wood, rope, bamboo, data, 25 x 14 x 14 in.

Miebach’s work is both didactic and fanciful. Straddling that line, it demands reflection: Why do we associate some visual languages with scientific fact and others with aesthetic expression?

conference in Edinburgh, Scotland. In 2013 she took part in Synergy, a project of MIT and the Woods Hole Oceanographic Institution that “catalyzes partnerships between artists and research scientists”; out of that came *To Hear an Ocean in a Whisper*, a large, ambitious piece she

made in collaboration with oceanographer Jonathan Fincke, about the marine ecosystem of Georges Bank in the Gulf of Maine.

Kids love Miebach’s work, which is why science teachers were among the first to embrace it, she says, even before the art world. “On one side, my work



Musical Buoy in Search Towards a New Shore, 2009, reed, wood, data, 2.7 x 2.7 ft. dia.

PRESERVING A MOMENT IN TIME

This sculpture is a three-dimensional representation of a musical score – a visual, tactile expression of *Navigating Into a New Night* (opposite), which Miebach created with weather data collected in Boston in fall 2008, when her father-in-law died.

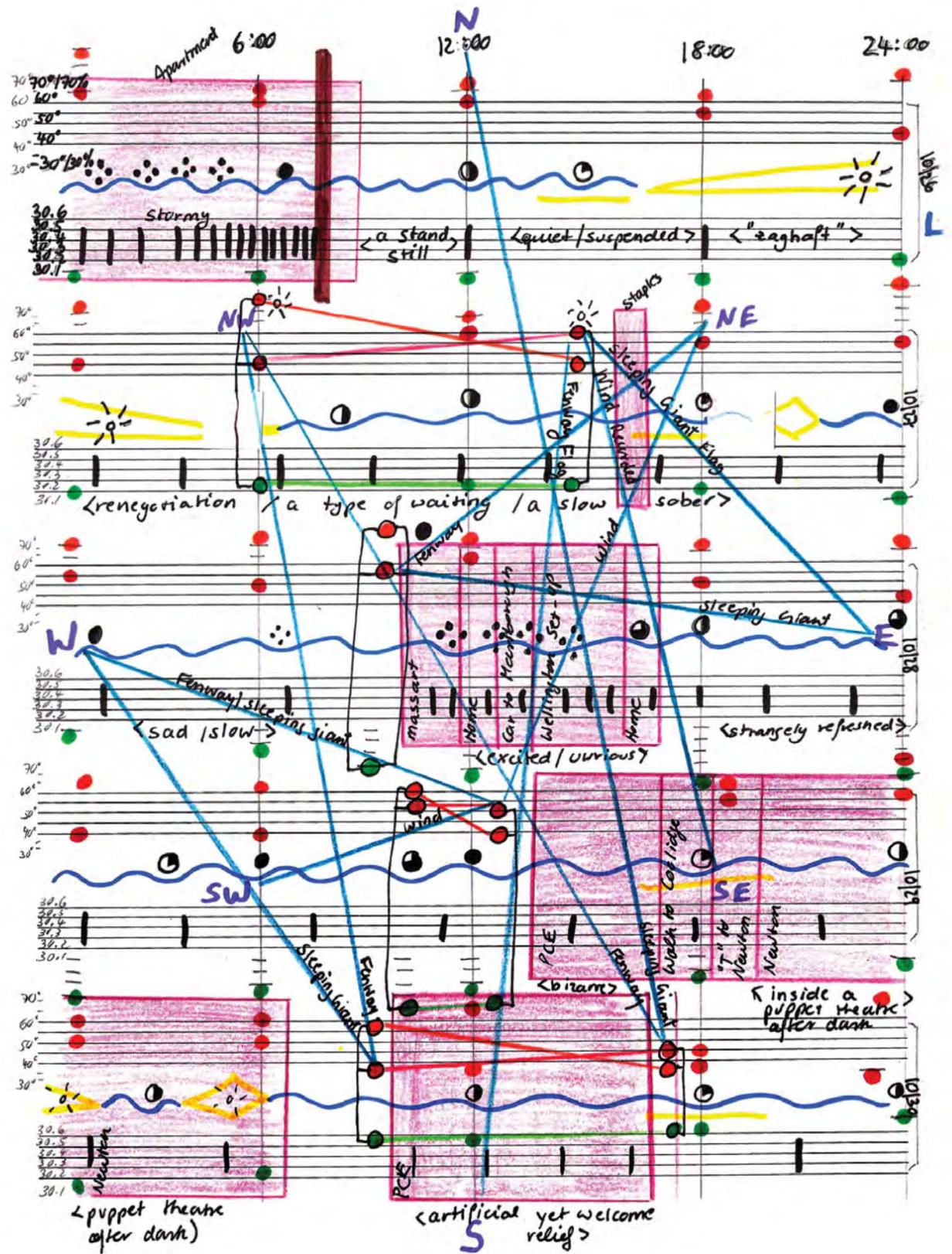
is very didactic, almost like a graph that tells exactly the relationship between variables, a very scientific representation. On the other, it’s a fanciful, magical, crazy expression of weather that still uses data as a source of material, but has crossed a boundary.” It challenges us to think about how

we visualize information: Is data just as valid in a sculpture as in a graph? Have we been conditioned to associate some visual languages with scientific fact and others with aesthetic expression? If the latter is true, then she wants her work to be “right at the cusp of that tension.”

WHAT DATA CAN’T SHOW

OPPOSITE: Emotions affect how we experience and remember weather. In the score dealing with the loss of her father-in-law, Miebach uses black vertical lines to represent tempo and what time felt like during that emotional period.

Navigating Into a New Night
Weather Score for Sculptor and Musician



Photos: Nathalie Miebach

Navigating Into a New Night (excerpt), 2009, score

A blend of science and art seems to be part of Miebach's DNA. She grew up in Germany, her father's native country, until the age of 12, when his job as an engineer on the Hubble Space Telescope brought their family to the United States. "He would come home with pictures that the Hubble took, and he would talk about these galaxies, millions of light years away," she remembers. Her French-born mother was creative, and enjoyed weaving baskets, crafting stained glass, and painting. Miebach was involved in theater as a teen, earned a BA in political science and East Asian studies at Oberlin College, then spent two years teaching English in Indonesia. There, she discovered that "if you wanted to understand what was going on politically, you hung out with artists." That revelation sparked her interest in visual art, "not just as a language, but as a vehicle of thought."

Back in the United States, she enrolled at the Massachusetts College of Art, where she got an art education degree and later an MFA in sculpture. In between, she studied basketry with Lois Russell, today president of the National Basketry Organization, who encouraged her to "think outside the vessel." She made work about astronomy for a while, then "came down to Earth." All along, she has reveled in the endless structural possibilities of the basket form, which she regards as an ideal modern tool for data visualization. Take any brainstorm map, matrix, or web, she points out, "put it in 3D, and voilà! You have a basket."

Miebach's latest work involves yet another dimension—sound. Looking to bring more nuance to her pieces, she thought about how a composer writes down a basic melody, then achieves an emotional quality by adding notations, or directions to the player, around it. So now she's

translating data into scores that she can use to build a sculpture, and that also can be read and played by a musician.

The "melody" is fixed data, such as wind levels, temperature, and barometric pressure. Less quantifiable elements, such as cloud cover, are given a more free-form visual and musical treatment, leaving room for a player to interpret and improvise. (Visit her website to hear samples.) The sinking of the *Andrea Gail* in the "Perfect Storm" of 1991 was her inspiration for a series of these 3D musical scores, including a boat form on wheels representing tidal calendars, and maplike wall pieces that track the dance of two storm systems as they combine into one massive Nor'easter.

"The point is not to make a purely expressive piece, though some musicians have done that," she says. "The point, really, is to hear the information. What kind of dissonance comes out of it, what kind of harmony? Is there harmony?"

For herself, Miebach has found harmony in diverse worlds, "different resonance in different communities." She relates deeply to craftspeople, but also seeks out the company of data visualizers, a tech-oriented group that has coalesced in the last few years and encompasses designers, coders, sculptors, filmmakers, "people who are really interested in numbers and data, what data can be." She thinks it's no coincidence that the DIY maker movement rose in tandem with a tidal wave of technology overwhelming our lives. Even at the tech conferences she attends, she says, "what I hear over and over again is this real need for making things tactile."

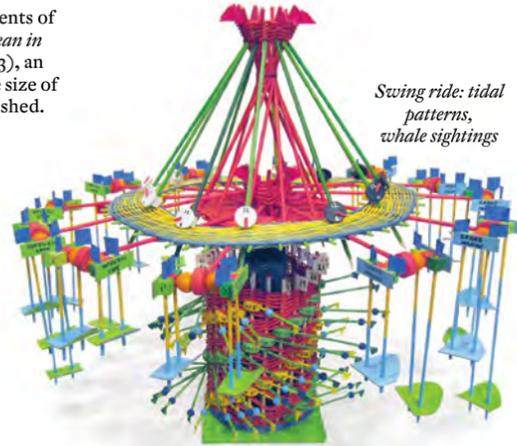
+ nathaliemiebach.com
Nathalie Miebach's solo show, "Changing Waters," a look at the meteorological and oceanic interactions in the Gulf of Maine, is at the Craft and Folk Art Museum in Los Angeles through January 5.

Miebach's imaginative work asks us to rethink how we think of—and look at—data.

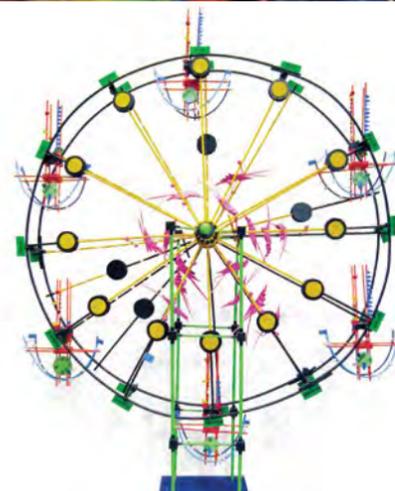


Photos: Nathalie Miebach

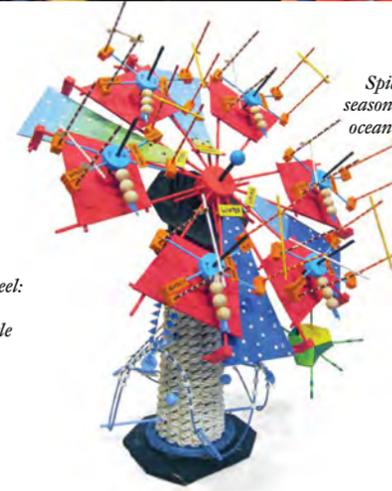
Some components of *To Hear an Ocean in a Whisper* (2013), an installation the size of a small garden shed.



Swing ride: tidal patterns, whale sightings



Ferris wheel: krill's daily cycle



Spider ride: seasonal changes, ocean buoy data



Merry-go-round: krill in context of seasonal data

THE CARNIVAL UNDER THE SEA
To Hear an Ocean in a Whisper is a collaboration with Jonathan Fincke, an acoustic engineer and oceanographer who uses sound to study biological processes in the Georges Bank, an elevated swath of sea floor that separates the Gulf of Maine from the Atlantic Ocean. Miebach used his acoustic data to illustrate the presence of krill. Each amusement park ride interprets biological, seasonal, or geophysical cycles and patterns associated with the tiny crustaceans, while all of the rides together comprise a map of the area and nearby coastal features.