

Surface Design

Creative Exploration of Fiber and Fabric

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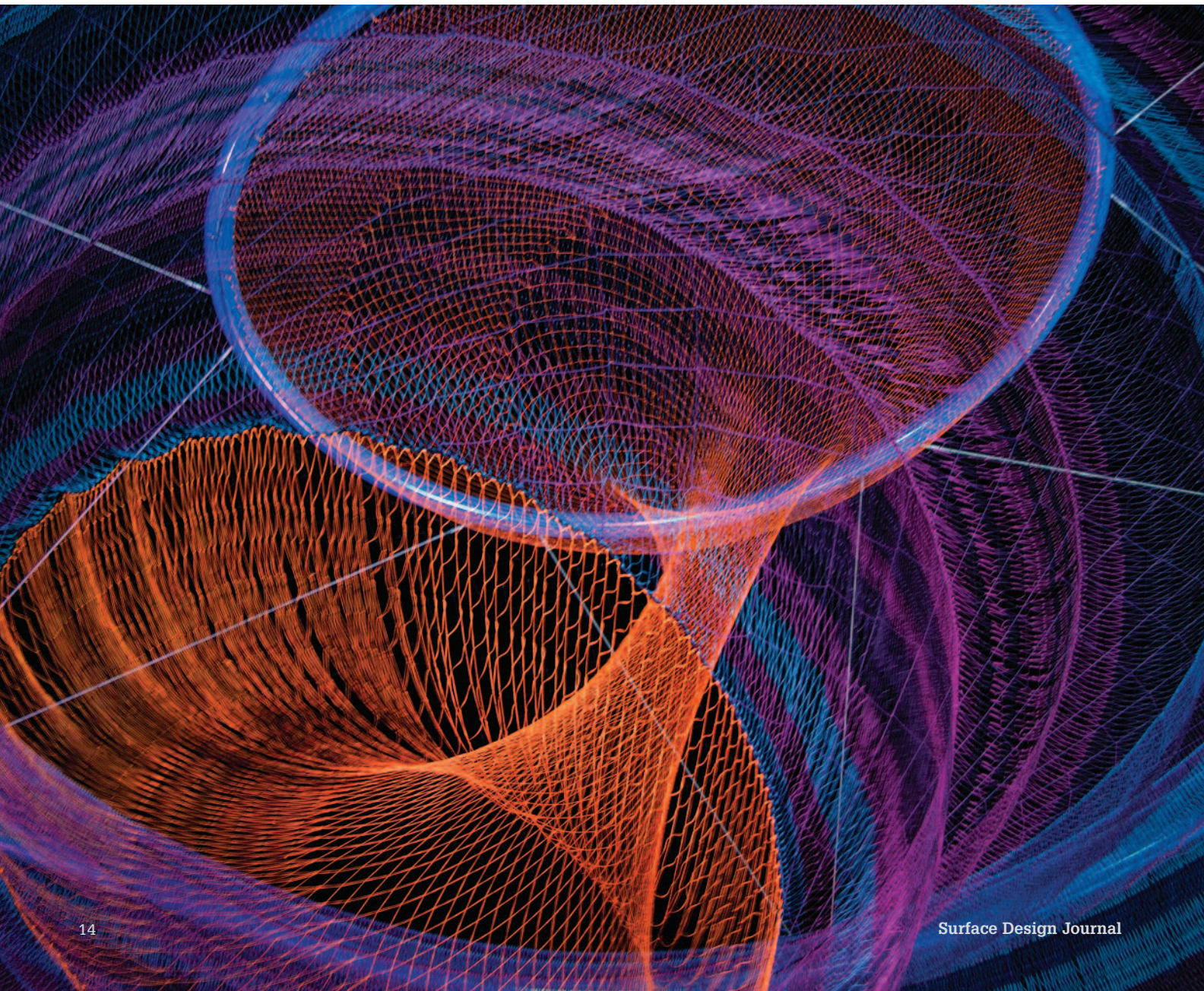


Interview

J a n e t E c h e l m a n

Janet Echelman builds living, breathing sculpture environments that respond to the forces of nature—wind, water, and light—and become inviting focal points for civic life. Named Architectural Digest’s 2012 Innovator for “changing the very essence of urban spaces,” Echelman combines ancient craft with cutting-edge technology to create permanent sculpture at the scale of buildings.

In a recent e-interview, Echelman discussed how state-of-the-art research, tools, and materials have expanded the scope of her creative vision worldwide.

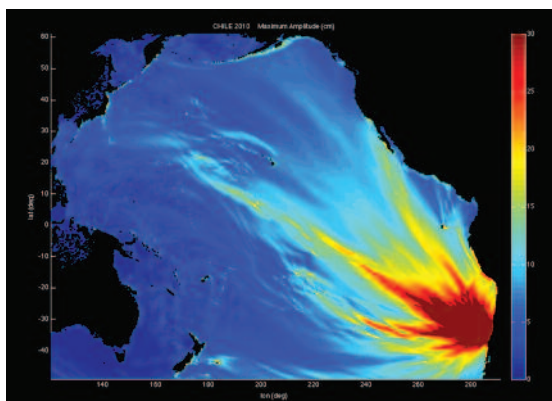


The invisible grace and strength of wind currents has been a key component of your work since 1996 when you began making netted sculptures on the coast of India. As the Earth experiences more pronounced effects of global warming, how has scientific research influenced your designs?

I've been working on a series for three years called *1.26*. It started in 2010 when I got a call from the City of Denver, host of the Biennial of the Americas, asking if I could represent the 35 nations of the Western Hemisphere and their interconnectedness in a sculpture. I had no idea how to do that, but I said "yes."

I had been following the tragic earthquake that had just occurred in Chile when I came across an article by a National Aeronautics and Space Administration (NASA) scientist who measured the effects of the earthquake on the entire planet. I was surprised to learn that the earthquake shortened the length of the day by 1.26 microseconds by speeding up the earth's rotation. It was hard to fathom how a physical event in one part of the world could affect the flow of time—something I thought to be certain and inescapable. This became the catalyst for the artwork.

I then looked at the tsunami wave-height data gathered by the National Oceanic and Atmospheric Administration (NOAA). With their data set, my studio created a 3-D model of the tsunami's amplitude rippling across the ocean, which inspired my textile form. The result was my sculpture *1.26*, its name referring to the microseconds by which the day was shortened



ABOVE: NOAA simulation of the tsunami that followed the 2010 earthquake in Chile, shortening the length of the earth's day by 1.26 microseconds.

LEFT: JANET ECHELMAN *Her Secret is Patience* Detail, painted and galvanized steel and cables, changing sets of recyclable high-tenacity polyester braided twine netting, colored lighting with computerized programming, hand and machine knotting, 100' wide at top, 15' wide at bottom, 2009. Photo: Karie Porter.



ABOVE: JANET ECHELMAN *1.26* (Installation view, Sydney, Australia) Spectra® high-tenacity polyester fiber, hand and machine knotting, lighting, 230' x 63' x 30', 2011. Photo: Marinco Kojdanovski.
BELOW: JANET ECHELMAN *1.26* (Installation view, Denver, Colorado) 2010. Photo: Peter Vanderwarker.



“In early design phases, I try to disregard both inner and external critics. . . .”

when the earthquake redistributed the earth’s mass.

After North America, *1.26* traveled to Sydney, Australia, in 2011 and Amsterdam, Netherlands, earlier this year. Because *1.26* is made entirely of lightweight materials, it can attach to existing architecture without extra reinforcement. Its soft surfaces are animated by the wind, its fluidly moving form contrasting with the rigid surfaces of the urban surroundings. At night, colored lighting transforms the work into a floating, luminous form.

Your monumental yet gentle public art projects unite and energize the surrounding communities. Why do you think your work has had such an uplifting effect on so many people around the globe?

I hope my art creates an invitation to listen to our inner selves, and to connect us to one another in a public space. In that way, I hope my art can be a transformative element in our busy urban lives.

For *Her Secret is Patience*, my 145-foot-tall aerial sculpture in Phoenix, Arizona, I was inspired by the region’s distinctive monsoon cloud formations and the shadows they cast, in addition to forms



found in desert flora and the local fossil record.

The nighttime lighting program I created changes color gradually through all four seasons. I selected the color temperatures to provide a sense of relief to residents of this extreme climate, shifting to cool hues in summer and warm tones in the winter. The lighting design also varies from night-to-night what portion of the sculpture is most illuminated, leaving some parts obscured in mystery, much like the phases of the moon.

I was asked to create a “Zone of Re-composure” for travelers after they go through security inside the San Francisco International Airport. I find calm in nature; since airports seem to be completely devoid of nature, I wanted to bring it in.

We did this by cutting three round skylights into the ceiling and suspending delicate layers of translucent colored netting to create three volumetric forms. Visually, the piece *Every Beating Second* evokes the contours and colors of cloud formations over the bay and hints at the silhouette of the Golden Gate Bridge. During the day, sun streams through the skylights casting shifting shadows on the floor. At night, a program of shifting colored lighting makes the netting glow as computer-mechanized airflow animates the sculpture to suggest wind and the presence of nature within Terminal 2.

I’ve been getting feedback that the sculpture is working—getting people to stop, look up, and slow down for a moment to contemplate the phenomena.

How have new high-tech materials and state-of-the-art 3-D modeling programs provided solutions to the complex technical challenges unique to each location?

After drafting a design, I work with engineers and architects to transform my simple sketches into scale 3-D forms within a larger 3-D site model. These models help me to adjust the scale of my artwork to the human body and architectural context until it evokes the feeling I seek.

We’re in the midst of a collaboration with the design software company Autodesk. They are developing a tool that enables us to design textile nets and exert the forces of gravity and wind on them. As an artist, it’s so exciting to be able to draw out textile forms and very quickly understand how they will drape. With this new tool, the computer is giving me feedback in real time that informs my design decisions—it’s pretty great.



JANET ECHELMAN *Her Secret is Patience* (on display in Phoenix, Arizona) Painted and galvanized steel and cables, changing sets of recyclable high-tenacity polyester braided twine netting, colored lighting with computerized programming, hand and machine knotting, 100' wide at top, 15' wide at bottom, 2009. Photo: Christina O'Haver. Daytime view *OPPOSITE PAGE*. Photo: David Feldman.

All of my recent works are a combination of machine and handwork. My studio uses handwork to create unusual shapes and irregular joints to make lace patterns within the sculpture. Using proprietary aeronautical computer software written specifically for my work, panels are made stronger with machine-tightened knots engineered to withstand ice storms and hurricane-force winds.

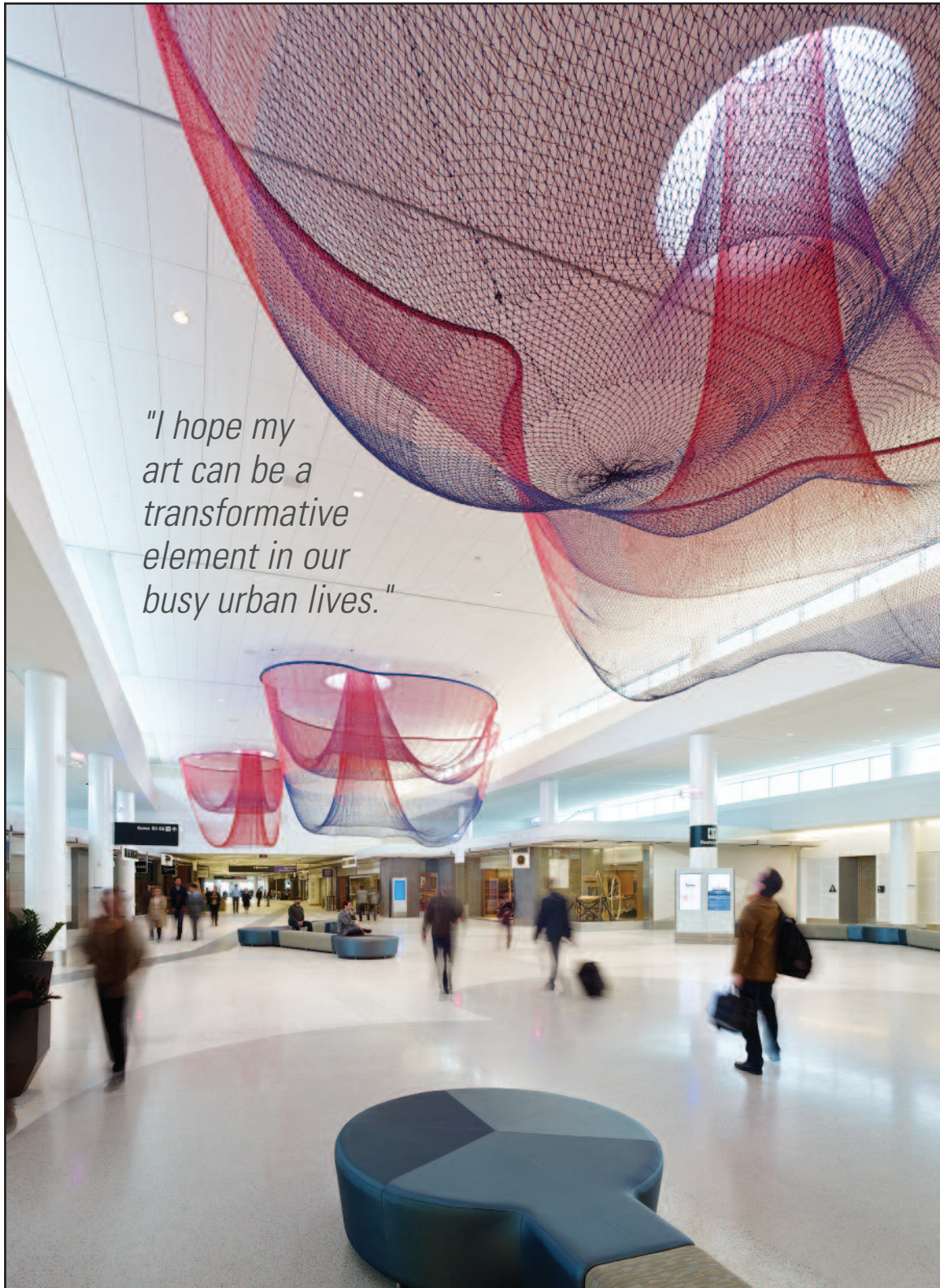
We use different high-tech fibers for different parts of the sculpture, just as a spider uses many different types of silk for the various parts of its web. When we want to make large structural spans with delicate rope sizes, we use Honeywell Spectra®, a fiber more than 15 times stronger than steel. We use W.L. Gore when we need 100% UV resistance. Tenara® architectural

fiber has exceptional colorfastness and resistance to high temperatures, chemical reactions, and stress that allows the sculpture to withstand sun and wind over time.

Your 2011 TED talk has been translated into 33 languages and viewed by more than a million people worldwide. Do you have any advice for artists striving to communicate their vision?

When I started making art, my biggest challenge was learning to hear my inner voice. I began writing and drawing with my nondominant hand, which gave me access to my more fledgling, vulnerable ideas that were being overpowered by my more conscious, skilled hand.

Once I began to pay attention to these



JANET ECHELMAN *Every Beating Second* (Installation view at San Francisco International Airport) Powder-coated steel, colored fiber, skylights, terrazzo floor, computer-programmed airflow and colored light, braiding, knotting, netting, total area about 15,000 sq. ft. (28.5' x 83.5' x 176.5'), 2011. Photo: Bruce Damonte.



JANET ECHELMAN *Water Sky Garden* (Installation view outside the Richmond Olympic Oval in Vancouver, British Columbia) Tenara® architectural fiber net forms hung from painted galvanized rings, cedar bridge, fountains, programmed lighting, total garden area about 75,000 sq. ft., 2009. Photo: Christina Lazar Schuler.

new ideas, the biggest hurdle was learning how to respect them—by investing the attention and work needed to develop them. This was difficult, but an important step in my growth as an artist.

When developing an idea, I remind myself not to start with compromise. What would result if I had no limits in resources, materials, or permission? I've learned that many ideas might be more viable than they initially appear. They just need a chance to mature and develop.

In early design phases, I try to disregard both inner and external critics, imagining my goal as a reality, then working backwards to figure out all the steps needed to make it so. I use inspiration and look towards people who have accomplished unimaginable ambitions.

If you start with yourself and make sure you fully believe that what you're doing will create positive change in the world, then you can go out and share your vision with genuine belief. Being authentic is the most important thing when communicating about one's art.

Do you have any new projects on the horizon?

Right now, I'm in the middle of the fabrication of an exciting sculpture for the Matthew Knight Arena at the University of Oregon in Eugene. The 30-foot-long form composed of five interconnected smaller forms will highlight the role of spectators and the interconnection of members of the basketball team.

Construction has begun for my artwork *Pulse* for Dilworth Plaza in Philadelphia. I'm excited about how this work reshapes urban experi-

ence and uses a new material for me—water.

Above ground, the artwork traces the pathways of the three subway lines that run beneath the plaza's new fountain, revealing the urban circulatory system like an X-ray. In real time, a data feed of train arrivals and departures will initiate the movement of 5-foot-tall curtains of "dry-mist" composed of atomized water particles illuminated by colored light.

Where would you like to see your work in the future?

My dream is to transform hard-edged cities with soft, organic forms—to create spaces that foster calm and contemplation. The question "How can I create this kind of change with something like sculpture?" is what pushes me. To this end, I'm using my new lightweight structural strategies to create a new kind of artwork that can easily attach to the tops of existing skyscrapers, traverse urban airspace, and safely go above roads and public plazas.

I'm committed to interacting with people in the midst of their everyday existence because I don't believe art should be separate from life. And I believe art can be a catalyst for change.

Janet Echelman's website is www.echelman.com. She will be the keynote speaker at *in•ter•face*, the 17th International Surface Design Association Conference in San Antonio, TX (June 6–9, 2013). To read the brochure and register online, visit surfacedesign.org/2013conference. To read the unabridged transcript of this interview, visit surfacedesign.org/newsblog.