

Department

Going Permanent

Gary Singh

■ **FOR 18 MONTHS**, environmental artist Andrea Polli lit up a bridge in downtown Pittsburgh. Via her piece, *Energy Flow*, she used 27,000 LEDs powered by wind turbines to create a temporary light display on the Rachel Carson Bridge, one of the city's three iconic bridges stretching over the Allegheny River. In real time, weather stations attached to the bridge provided data that was used to alter the light display. The cover image by Christopher Litherland, as well as Figure 1 are from the project, originally commissioned by the City of Pittsburgh for its bicentennial and supported by a number of partners. Ron Gdovic, of WindStax, a Pittsburgh-based wind turbine manufacturer, developed and contributed the turbines.

Polli, who received her MFA from the School of the Art Institute of Chicago and her PhD from the University of Plymouth in the UK, currently teaches at the University of New Mexico (UNM), in both the College of Fine Arts and the School of Engineering. Her dad was a computer scientist, so Polli grew up surrounded by computers and began programming as a young kid, mostly just crunching code for fun. When chaos theory and fractals began to achieve mainstream popularity, she continued to program as a hobby, but never intended to do anything serious with her chops. By the time she got to graduate school at the Art Institute of Chicago in the 1990s, CG practitioners were still having a very hard time getting their

work accepted as “real art,” especially in the confines of academia, so Polli was among those who just toiled away in her spare time. Then, the legendary computer music pioneer and trombonist George Lewis became one of Polli's mentors and produced a spark at the right moment of her graduate career. It was that simple.

“I really credit George with coming into the computer lab one time when I was screwing around and actually acknowledging that what I was doing was art,” Polli says. “He was the first person who did that.”

The rest is history. Now Polli presents or installs work all over the world while still holding down appointments at UNM. This author witnessed the debut installation of her work, *Particle Falls*, in San Jose, CA, in 2010.

PARTICLE SYSTEMS

The roots of *Energy Flow* (see cover and Figure 1) can be traced back to an NSF Sustainable Energy Pathways Through Education and Technology (SEPTET) grant supporting a number of engineers researching how to make solar panels more efficient. The role of Polli's lab at UNM was to help increase public awareness of energy usage and sustainability issues from an artistic perspective.

“We started doing some projects with these LED strips, low-power consumption LED strips that had just started to become popular and have individually addressable RGB lights and millions of colors,” she recalls. “We could control them with off-the-shelf microprocessors like Arduinos and Raspberry Pis and so I started working with

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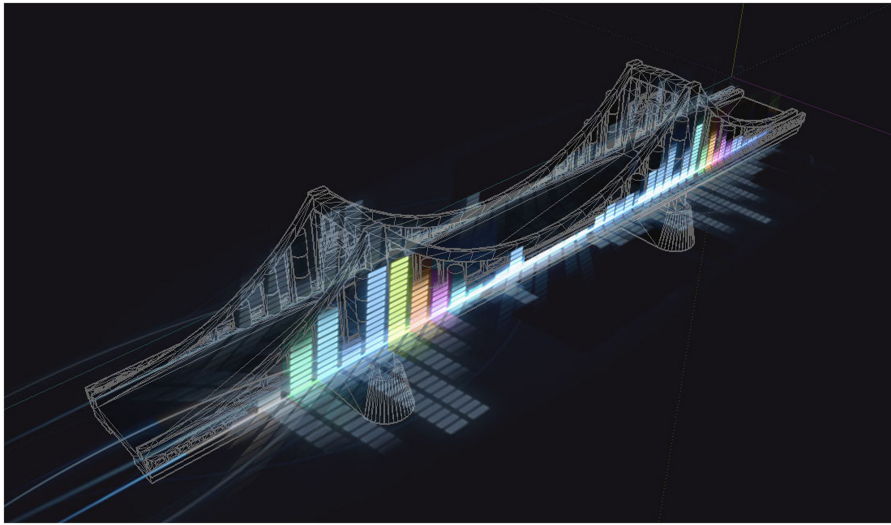


Figure 1. Schematic of *Energy Flow* by Andrea Polli (used by permission).

the researchers in my lab to develop some pieces.”

Eventually Polli and her team used the LED strips on a number of projects, even in some cases with interactive elements enabling viewer/participants to send texts that changed the lighting configurations in real time, all while her team

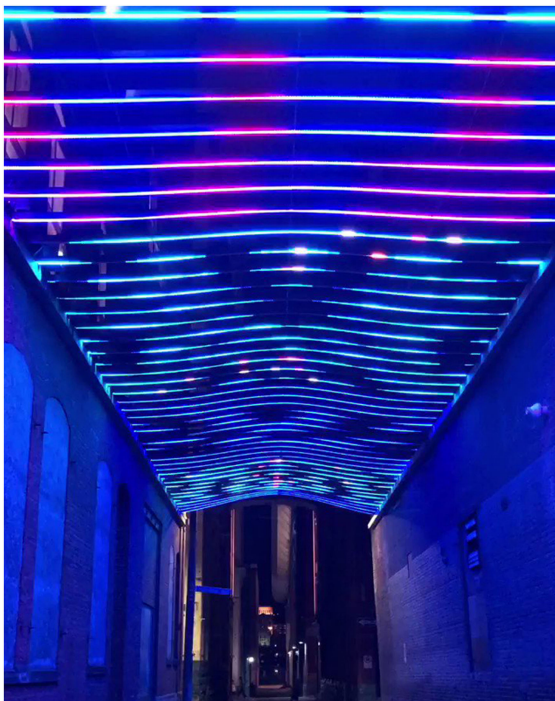


Figure 2. *Garrison Canal*, photo by Jared Rendon-Trompak (used by permission).

gradually worked out the bugs involved with installing them. Then, came the call to light up the Rachel Carson Bridge, providing an opportunity to scale up the concept by massive degrees. Polli entered the competition and won. But for *Energy Flow*, however, nothing was interactive.

“We were able to integrate that technology with the bridge, but we didn’t make it public,” she says. “We developed a platform where we could update and change some of the sequences of the animations with our cell-

phones, but it was all fully secure.”

Nevertheless, the project was a huge success. After *Energy Flow* concluded, Polli did not want to let the creative energy dissipate, so she repurposed some of the equipment for another Pittsburgh project on Garrison Place, a downtown alley more than overdue for revitalization. For the installation, *Garrison Canal* (see Figure 2), Polli situated the LEDs inside an urban overhang, a canopy of sorts, to illuminate a previously underutilized area.

As with *Energy Flow*, the project works by interpreting weather data in the form of particle systems. The density of the particles is based on the precipitation and the color balance is based on the temperature, although Polli reversed the normal warm and cool parameters, so when the temperature is cold, the lights exhibit warm colors—i.e., reds and oranges—and when the temperature is warm, the lights become cooler, i.e., shades of blue. Polli says the algorithms are quite simple. She can make small changes that trigger dramatically different results. This is part of the reason why she loves particle systems.

“A lot of times when you use realtime data, you don’t know what data you’re going to be getting at any time,” she says. “And at least with a particle system, if we tweak it right, you can get some things that are interesting-looking.”

As a result, the project has created a new public space in Pittsburgh. A regular spot for parties,

DJs, and other activities has now emerged, with *Garrison Canal* scheduled to be a highlight of a local children's theater festival this May.

TOWARD PERMANENCE

Still though, Polli is not the equivalent of a traditional graffiti artist who totally relishes in the impermanence of her work. Even with the success of the Carson Bridge project and the Garrison Canal installation slotted for several more years, Polli still desired more. All of these projects are temporary, so she began to crave a more substantial project with lasting effects. As of a few months ago, just such an opportunity

arose. At press time, she could not blow the whistle on the details of the project, but it was safe to reiterate the word 'permanent.'

"It's related to visualizing air quality in a permanent public sculpture," she says, adding that the project will address some of the same issues with which she usually works and also utilize similar technology, but in a more permanent fashion. "[My other projects have] been this thing that happened, and then it disappears in the ether. And I'm just really happy about the possibility, or hopeful about the possibility, of something more permanent."

Gary Singh lives and writes in San Jose, California.