RAIN YARD

THOUGHTS ABOUT RAIN, WATER AND ART

By Stacy Levy and the staff of the Schuylkill Center for Environmental Education

Based on the permanent artwork “Rain Yard” at the Schuylkill Center for Environmental Education
Most of us start the day thinking about rain. We wake up, we glance out the window to see the sun, and then we begin our morning rituals. In that moment of looking at the light, we unconsciously register a lot of information: how much sun there is, how many clouds are in the sky, what we think the weather will be like that day. When we listen to or check the morning weather forecast, we are making a judgment: how likely is it to rain? Is this a day to wear a jacket or an umbrella? Where is the umbrella, anyway?
We think about the rain (or the not-rain) so often that we barely notice how it is woven into the fabric of our everyday lives.

Think about the rain.
It rains a lot each year. In Philadelphia, we have an average of 42 inches of rain every year. 42 inches is about the height of a four year old child.
Living with rain is a challenge each generation has had in common. Before sidewalks and roads were built, places became muddy and impassable when it rained.

Nevertheless, people invented ways of getting around in the rain. People made sidewalks and roads so they didn’t have to walk or push carts in the mud when it rained.

Rain has had a profound effect on the way we build everything. If you were to go around with a level, checking whether the built environment is perfectly flat, you would quickly discover the things that look flat are actually tilted.

We slant everything. This idea is second nature to an architect of any sort. Architects are always thinking about tilting the surface because every structure or landscape they build needs to accommodate water or move it out of the way. This is called positive flow. Take roads, for example. We think of a road as being a flat line, but it is really not. It’s more like a hump. The place where the stripe goes, in the middle of a two-lane road, is the crown. It’s designed to be the highest point in the road so that the water will slide down each side of the road instead of making giant puddles for cars to drive through.
Look at the different surfaces in the world. What happens with the rain when it interacts with these different surfaces?

What are the hidden properties of these surfaces?

Do they have holes, are they tilted, or what?
Is it raining? Will it rain? We look up to see. The sky is dark, gray and moody. We know weather is coming, we feel the wind on our faces. Sometimes we can smell it in the air. Water. Then one drop falls. On our faces, on the ground. We look down to see the pavement being stained, drop by drop, by tiny raindrops. We see the dirt change color, to a darker brown or black, and become shiny. We see a pond’s surface change from flat to rippled. The rain has come.
Earth's water is always in motion. The natural water cycle, above, describes the continuous movement of water on, above and below the surface of the Earth. Water is always changing states between liquid, vapor and ice. These processes happen in the blink of an eye and over millions of years.
When it is raining in a natural environment, many of the raindrops land on leaves, grasses and plants before they are able to reach the ground. This is a very important part of the water cycle. Raindrops drip their way down the plants and to the ground, slowing the pace of water moving through the environment. Once the raindrops hit the ground, they begin their journey across the land to their ultimate destination—a stream, lake, pond or perhaps an underground aquifer. Some of the raindrops will move along the surface of the ground on this journey, but most are absorbed by the soil and make their journey underground. Water is journeying right under our feet! This is called groundwater, and it is how big bodies of water get refreshed in nature.
The rain that stays above the surface and does not sink into the earth is often referred to as stormwater. Stormwater is both influenced by, and exerts influence over, the landscape. Gravity causes stormwater to flow downhill. Stormwater can create unique habitats such as vernal pools, temporary or seasonal pools of surface water that are important breeding habitats for many plants and animals. Several salamander species breed in vernal pools.

However, if there is too much storm water, it can damage the environment because the moving water can act as a powerful force that moves soil, rocks and plant material and dumps them somewhere else. This is called erosion. Large storm events can create a lot of stormwater when there is a lot more rain than the soil can absorb.

The things humans build also create a lot of stormwater because buildings, roads and other hard surfaces do not absorb any of the rain.
When it rains in a city such as Philadelphia, where there are a lot of buildings, roads and other paved surfaces, the majority of raindrops move along these surfaces. This stormwater increases in volume and speed as the water moves across a landscape where there are few surfaces that can absorb any of the rainfall. This radical increase in stormwater creates problems for people and the environment, such as flooding, water pollution and erosion.
Cities turn the whole flow of water in the landscape inside-out. The more water that travels across the surface of the ground on its journey to a stream or river, the less water there is to replenish our groundwater. But does it have to be this way?

Concrete and asphalt resist absorption. Flooding may happen when water travels along these surfaces and looks for ways to escape.

SOME WATER ABSORBED IN SOIL

GROUNDWATER

STORMWATER RUNOFF GOES DOWN SEWER DRAINS

URBAN RUNOFF
What is a “green building?” This term refers to a structure that is environmentally responsible and resource-efficient throughout its life cycle. Where we build a building affects where the water goes. How we handle the space around that building (by choosing pavement, grass, gravel or plants) will affect where rainwater ends up and how fast it travels. Ultimately, our choices can help or hurt the natural world around a building.

Smart decisions about where and how stormwater will be controlled may be one of the most important things a green building can do.

We can create a system that allows a building to live with the landscape in a collaborative way. This is an essential and simple act of kindness to the environment.
WHAT IS RAIN YARD?

Designing spaces for people that are also kind to the landscape sometimes requires creativity and imagination. In the Sensory Garden behind the Schuylkill Center’s visitor center, we decided to ask artist Stacy Levy to create an artwork that would manage stormwater and protect our land.

Rain Yard aims to make water an integral part of the sensory experience. Without rain, nothing would grow. Rain Yard has a very specific practical function: it collects and distributes the rain that falls on the roof of a building at the Schuylkill Center. It also has a specific artistic function: it allows a visitor to observe rain water on its journey from the sky to the ground, and calls attention to the way that the ground is an essential part of the water cycle.

Rain Yard is located within the Sensory Garden, which features native plants with interesting colors, smells, and textures. Rain Yard aims to make water an integral part of the sensory experience. Without rain, nothing would grow.
DESIGN OF RAIN YARD

Rain Yard is a type of art sometimes called environmental art or eco-art. It deals with ecology and sustainability. This kind of project supports nature, educates people and brings together the best of art and science.

A Place for People and a Place for Water

Artist Stacy Levy wanted to shift the way we typically treat rainwater. Usually rainwater falls on the roof and we put it into a gutter, then into a downspout and finally into the sewer. Even though the rain wants to go everywhere, we make it go into narrow, specific spaces. People, on the other hand, are allowed to walk all over the landscape and go wherever they want.

Rain Yard is a reversal of the “people everywhere, rain in narrow spaces” idea because it puts people in the narrow space and rain gets a lot of room. In Rain Yard, people walk only on the steel catwalk, and beneath them is a rain garden—a sort of bowl dug into a garden to hold the water. The rain goes into the bowl and is allowed to seep into the ground instead of traveling down the hill.
The Spirals
Blue spiraling gutters carry rainwater from a major roof drain on the building into the rain garden. There, the water can slowly soak into the soil, providing moisture to the plants.

The Platform
The rain is allowed to infiltrate into the ground while people can hover over the flowering rain garden on a steel catwalk platform. Native plants beneath push through openings in the platform. When you walk through Rain Yard, look for the tips of reeds and rushes, or the flowers of blue flag iris. This platform keeps people from trampling on the garden plants.

The Surfaces
In Rain Yard, we can see every part of the rain’s journey. But we don’t have to just look: we can also play.

This idea of interesting surfaces inspired the troughs, the big buckets in Rain Yard, each of which is filled with a different material. You can pour or squirt water over the surface and see what happens: it’s a mini-experiment in infiltration. It is like a catalog of surfaces you can test out.

In our built world, different surfaces act differently. We perceive the surfaces of our everyday lives as hard or soft, and black, gray or yellow, but they have all these other qualities too. Some are impervious (nothing can get through) and some are porous
(allows some things through). Some hold heat and some do not. How water moves across a surface will vary depending on what the surface is made of.

The Plants
A selection of special plants grows beneath and around the platform. These plants are particularly good at living in wet and dry conditions. The plants line the basin we dug out - which was precisely calculated by water engineers to hold the water that comes off the roof in a typical heavy rain fall. Like any other garden, Rain Yard’s garden will need to be tended to regularly. Our engineers constructed the platform to open up to allow for weeding and replanting in the garden.

Collaboration with Engineers, Scientists, Plant Experts and Educators
Rain Yard required engineering as well as design. The project evolved from a concept, to a set of sketches, to a set of engineering diagrams and landscape plans. It often takes a team to build an environmental art work. The team also included members of SCEE’s education staff and nature play experts to help refine the design further. This project is the result of many people working together to make an artwork that works for nature and helps people learn more about rain, water, and the world around them.
You too can have a rain yard! Or at least, a yard that’s friendlier to rain, helping it soak underground. There are many things you can do to make your yard, your home, or your street better for rain.

Anything that slows the flow of water into streets and helps that rain percolate into the ground is great. Here are a few ideas to start.

1. **Plant a tree.** Trees act like umbrellas, with their leaves slowing down the flow of rain. After a storm, rain slowly drips out of a tree’s canopy of leaves for hours and hours, slowly releasing the rain back to the water cycle. Trees are great friends of water.
2. **Turn lawns into gardens.** Lawns are made of hard, compact grass that water has a hard time flowing through. Sometimes, a lawn doesn’t really let rain soak in effectively. If you turn even a little bit of your lawn into a garden, you’ll help the rain because the stems of your garden plants will slow down stormwater so it can move into the soil slowly. Also, garden mulch holds lots of moisture.

3. **Barrels of fun.** Many people use rain barrels under their house’s downspouts so that rain water pours into the barrels instead of into the street or driveway. Then they use this water on their gardens and lawns instead of using water from the hose. This conserves water.

4. **Simply turn the spout.** Instead of buying a rain barrel, you can also take the water coming down a spout during the rain, and turn it so it flows into the garden or lawn. You can even attach an extension to the spout so the rainwater carries across the whole lawn. Again, you are simply keeping rain out of the street.

5. **Build a different kind of patio.** This is hard to do, but it makes a huge difference. Rain flows across concrete patios and can’t seep into the ground through concrete. So instead of a concrete patio, put in one with large flat stones and spaces in between—rain will flow into the spaces, and into the ground. A porous patio makes a great rain yard!
ABOUT STACY LEVY

Stacy Levy is an artist who works with natural processes of the surrounding nature. She received a BA at Yale (1984) where she majored in sculpture with a minor in forestry. This combination of art and nature has remained entwined throughout her path as an artist. Stacy co-founded Sere Ltd., a design firm specializing in native landscape restoration for municipal, corporate and private landscapes across the mid-Atlantic region. The firm works to bring the architecture of a healthy ecosystem back to disturbed forest landscapes. In 1988, Levy attended Skowhegan School of Painting and Sculpture and earned an MFA from Tyler School of Art, Temple University (1991) while working as a forester. The combination of forestry and art has continued to inform her practice.

In first decade of her studio practice, Levy showed how nature works: illustrating hydrological patterns, showing the chemical content of the wind, reflecting the patterns of clouds in public art projects in Seattle, Tampa and Philadelphia. Her work has shifted to collaborating directly with natural forces: making projects that move with the tides, are scraped by erosion, rise and lower with floodwaters of a stream. Levy’s recent projects harness stormwater runoff and make it an asset to the site. She was part of the collaborative team for AMD & Art, a project for Vintondale, which remediates coal mining pollution (1997-2005). She worked with the Pennsylvania Horticultural Society...
Rain Yard is a collaboration with the rain. It captures the rain from the roof and leads the rain to a planted place to soak into the ground. Rain needs time and space to soak in, but in most of our built world, we do not give any space for the rain to act like rain—instead we pipe it away. On this site, we will work with what the rain needs by allowing it to slowly infiltrate the soil. This artwork is making a home for the rain.

When you allow the rain to soak in, you can get some rather mushy landscapes. These mushy landscapes are not always user-friendly for people. That is one of the reasons why we have so much paving in our world: so that you can walk on the ground whatever the weather. If you walk on a rain garden during a dry period, you will not know the difference between the rain garden and the regular perennial bed. But if you walk on a wet rain garden, you will be ankle-high in rainwater and mud. Furthermore, if you walk through the wet garden frequently, your footprints will start to kill the plants, because walking on plants compacts the soil around their roots and prevents the roots from getting oxygen.

Some of Levy’s commissioned works include projects for San Antonio River Foundation, San Antonio, TX; Harmon Library Park, Phoenix, AZ; Water and Land Art Festival, Niigata, Japan; The Arboretum at Penn State University, University Park, PA; University of South Florida, Environmental Sciences Building, Tampa, FL; Ontario Science Centre, Toronto; North Carolina Zoo, Ashboro, NC; Seattle Arts Commission for Mineral Springs Park, Seattle WA; and Morris Arboretum of the University of Pennsylvania, Philadelphia, PA.

Awards include: Public Art Year in Review Award, Ridge and Valley selected as one of the forty best projects of 2009, Artist in Residence Award, Haystack Mountain School of Crafts, Deer Isle, ME, Artist in Residence Award, Pilchuck Glass School, Stanwood, WA, Excellence in Estuary Award, Partnership for the Delaware Estuary Inc., Mid Atlantic Arts Foundation, “Artist as Catalyst” with The Fabric Workshop and Museum, Pew Fellowship of the Arts.

Levy continues to show extensively in galleries and museums: Documenta 11, Wave Hill, Ecovention, Mass MoCA, Walton Art Center Hudson River Museum ICA in Philadelphia. She has been represented by Larry Becker Contemporary Art in Philadelphia, PA since 1993.
For Rain Yard, I needed to design a way to have people be inside the garden without walking on it. Lifting people above the plants seemed like a good answer: People above and plants/rain/soil underneath. The catwalk prevents people from getting muddy and ensures that they will not compact the soil. And the catwalk floats the visitor above the garden—I really like that feeling of being slightly suspended over the landscape. I want the artwork to feel like you are on a dock stretching across a green pond of plants. Because the catwalk is made of expanded steel, some of the plants will actually grow through the mesh, so you get a close-up view of the seed heads and flowers that poke through.

My work is about making metaphors for people to understand how nature works. I always hope my pieces will give someone a new avenue to understand something about nature. I think that everyone deserves a re-explanation of the everyday workings of the world. In some of my work, art can be an important new way to fix things that are not working well on a site. Rain Yard is trying to fix a rainwater issue in an artful way. An engineer might fix a rainwater problem one way, and a landscape gardener would do it another way. I am trying to take all of those perspectives, to solve the problem while making an intriguing spatial and visual experience out of the solution.

I want to make a better home for the rain, where the building and the gardens all work collaboratively with the rain. This project will be a success if on the next rainy day, people look outside at the wet weather and think, “This is a perfect day to go to the Schuylkill Center to see the rain in action.”

ABOUT THE SCHUYLKILL CENTER

The Schuylkill Center for Environmental Education was founded in 1965 as the nation’s first urban environmental education organization. Its 365-acre sanctuary serves as a living laboratory to foster appreciation, deepen understanding, and encourage stewardship of the environment.

The Center reaches over 15,000 Philadelphia-area residents each year with a wide array of educational programs, including field trips for schoolchildren, continuing education for teachers, graduate-level college courses, and a full calendar of events for the public—seasonal festivals, walks, lectures, and more. It is home to Pennsylvania’s first nature-based preschool, an ambitious and innovative environmental art program, and a fully-licensed wildlife rehabilitation clinic that treats 3,500 animals annually.

In 2010, the Center signed a conservation easement with Natural Lands Trust, protecting in perpetuity the largest privately-owned parcel of open space within Philadelphia’s city limits.
Acknowledgements

Rain Yard was a true collaboration. I wish to thank the many generous individuals, companies and organizations who enabled Rain Yard to come to life: The National Endowment for the Arts, ArcelorMittal, Rees Construction, Sherwin Williams, Johnson & Johnson, Meliora Design, LLC, and GDLOFT.

Special thanks to Meredith Broussard who edited this book, Allan Espiritu who designed it and Tim Pacific who created the illustrations. Thank you to Rain Yard’s many volunteers, especially Ian Mair from ArcelorMittal, who gave of his time and brilliance on all aspects of the project, and Shawn Burns of Rees Construction, who generously donated weekends and wisdom and led the fabricating team. From the Schuylkill Center, thanks to Sean Duffy and Joanne Donohue, who tended to land, dirt, plants and water so wonderfully, and to staff contributors Gail Farmer, Camila Rivera-Tinsley, Anna Marchefka, Naomi Leach and Mike Weilbacher, who helped craft this project and this book.

And to Stacy Levy, who is a force of nature in the most wonderful sense, true thanks for the long hauls, smart ideas and willingness to forge ahead, again and again.

Jenny Laden
Director of Environmental Art
The Schuylkill Center for Environmental Education