

A Watershed Event: Communicating Landscape Processes

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Abstract

A watershed event was created to illustrate and quantify how water from precipitation moves across a land surface. This illustration is one of many that would be useful in developing the environmental literacy of greenway and open space supporters. The physical activity of marking the small sub-watersheds generated discussion and collaboration between volunteers. Stopping to watch the occasion of water shedding created a notable event. The materials assembled for documenting the event have provided materials for website presentation and lectures. The basic process is fairly easy to organize and recommended for use by greenway and open space groups who are interested in this type of combined environmental art/ outreach education event.

Introduction

This project began as a collaboration between an artist (Webb) and an ecologist (Hartman). We share an interest in the environment as well as predilections toward the other's area of expertise. Although the overriding idea of the project, making the invisible visible, resonates with both disciplines, we are definitely interested in different aspects of the effort. Our common language is design. When we talk about design principles such as repetition and variation, gradation, value, symmetry, etc., we are able to connect. Applying these principles to those things most invisible in our environment is a shared passion. Invisibility can be the result of two things. The first is literally being out of sight. Ground water is invisible for this reason. The second is caused by a ubiquitous presence. A parking lot is invisible for this reason.

Many landscape processes that land planners wish to protect are invisible to the untrained eye. For instance, can you see the sequestering of nutrients and carbon in a wetland; can you see the migration of woodland mammals along a greenway corridor; can you see the distribution of storm water in an undisturbed watershed? Our thesis is that you can learn to read the markings of the processes, if you are taught what traces of the process you can look for.

In watershed planning, understanding storm water, its volume and its impacts, has become increasingly important due to increasingly intense storms and flooding. However, environmental processes, like runoff and erosion, are very difficult for most people to picture or understand. Large scale landscape plans often claim beneficial roles for storm water management. Yet, most of the general public lacks training in spatial thinking that helps them understand these roles.

As a way to ensure that a part of our collaborations included the arts, we investigated the landscape surrounding the Myers School of Art, at the University of Akron. Webb was amazed at the way the grounds, that she barely looked at every day, opened up as a water system, with the guidance of looking to subtle evidence by pointed out by Hartman. We see the importance of

sharing this view with the students and faculty in the school. We also realized that every building and parking lot on campus could be a watershed demonstration site. Not only might this help our students understand the larger concept of watersheds but could foster an individual sense of responsibility for the water system.

Background

We are also interested in environmental literacy and spatial thinking. According to the Environmental Literacy Council, “environmental literacy requires a fundamental understanding of the systems of the natural world, the relationships and interactions between the living and non-living environment, and ability to deal sensibly with problems that involve scientific evidence, uncertainty, and economic, aesthetic, and ethical considerations” (ref). Spatial thinking is thinking that finds meaning in the shape, size, orientation, location, direction or trajectory, of objects, processes or phenomena, or the relative positions in space of multiple objects, processes or phenomena. If we talk about these using the elements of design (line, shape, direction, size, texture, color, value) and the principals of design (balance, gradation, repetition, contrast, harmony, dominance, unity), you can see that a fruitful discussion can happen.

The environmental topic we address is the watershed. The watershed is a spatial entity that can be analyzed with geodesign and landscape ecology methods (Tulloch 2013). The environmental structure and ecological functions of watershed are critical in many of today’s open space issues (Hersch et al. 2012) and are the purview of many governmental and non-governmental organizations (Dykman and Paulson 2012). We believe that a basic level of environmental literacy requires the understanding of the spatial structure and water shedding process of a watershed. We use a parking lot with three storm drains to reveal the structure and process.

Methods

With the goals of:

- a) providing education about watersheds and
- b) demonstrating a watershed process,
- c) creating an environmental art event (Bachelard 1958)

the parking lot of the Myers School of Art at the University of Akron was turned into a contour map with watershed boundaries marked.

The Myers School of Art is located on an interesting piece of land that is perched between a higher, extensively built-up piece of land (including parking lots) and a lower piece of land through which a well-traveled road, called Wolfs Ledges as well as rail road tracks, create boundaries. There are many features of the property including drainage pipes and storm sewers that go unnoticed by the students and faculty who are in the building, parking, and walking across the site on a daily basis. Much of the Myers School of Art site is covered by an asphalted parking lot with all the typical drainage features. We looked at it to consider: How did that water move? How could we visualize that movement? We agreed to work with non-toxic temporary paints to create an environmental art piece.

We then contacted the University of Akron Parking Services for permission use the surface of the parking lot to demonstrate the movement of water across the site. We wanted to leave a temporary visual record of the movement by using non-toxic water based paint and we wanted the event to take place early in the fall semester. Although we had anticipated resistance, the Director of Parking Services became part of our animated discussion and even told us of a faculty member in the engineering department who used parking structures as a place to create small experimental structures. His chief concern was that whatever we put onto the surface must not confuse those who needed to park. He did not want anyone saying that they could not park properly or were confused because of something we had done to the surface. We were not entirely sure that our project would not confuse those parking, but we were reasonably sure that it would not. To address his concern, we created a plan to inform users of the parking lot through flyers and email announcements about the project. We soon arranged a schedule: on the evening of Thursday Oct. 6, 2011, Parking Services would clean the lot; Friday, Oct. 7, after 5pm, initial marking of the elevations would begin; and Saturday, Oct. 8, the watershed drawing and demonstration would be created.

When classes started in September, we began contacting student groups and got enthusiastic response from the Civil and Environmental Engineering club for students and Environmental Akron, the student group on campus active in recycling. We recruited them for the event.

Our goal was to create a large scale drawing on the parking lot that represented the movement of the water. We were concerned that the lines have the fluidity that we normally associate with gestural freehand drawing. For Webb this was one of the big challenges and not one that we immediately knew how to solve. We wanted to give the art students the chance to create a drawing that they could control within the limits of the elevations set by the surveying students.

After some testing, we determined that weed sprayers could be fitted to the task of making fluid lines on the asphalt with our paint. The Campus Grounds crew loaned us portable tanks that could be easily carried, with tubing and wands that delivered a focused spray of color. Because the parking lot was so large the three inch wide spray was an appropriate scale for the “drawing”. The asphalt of the parking lot was in just the right condition. It was not so new as to be impervious to the water based paint. (The newer lots on campus also were the source of pride and not as readily turned over to artists who might deface them in some way.) The asphalt around the Myers School of Art was slightly textured and open without being deeply scared and checked.

As the work day ended on October 7, Parking Services also put up barricades to entering the lot and signage to prevent students from parking during the event. A group from the Civil and Environmental Engineering Club arrived on Friday evening and began to mark elevations (at six inch intervals) out from each of the three storm drains that made up the parking lot watershed system.

Saturday morning dawned clear and bright and warm with the temperatures reaching 80 degrees in the afternoon. Art students and alums began using the weed sprayers to connect the elevations. They used orange paint to create these contour lines.



Figure 1. A template for the 1' grid of dots speeded the marking process by eliminating the need for measuring.

We initially planned to mark a large part of the parking lot with a one foot grid of two inch round dots of blue to represent the water (Fig. 1). After several hours of general application of the blue dots, we to focused on the smallest of our three watersheds. This one ran down steeply into a loading dock area and was perfect for a demonstration of the potential of the watershed to clear water from the lot.

The Environmental Akron members had obtained a very large supply of empty 12oz soda cans. We placed them on a one foot grid within our smallest water shed, after filling them with water (Fig. 2).



Figure 2. Recycled 12 ounce cans were filled with water and placed on top of the 1' grid of blue dots. Twelve ounces per square foot represent approximately 1/6" of rain.

Once the stage was set, students with wide brooms began the sweep of cans towards the storm sewer (Figure 3). We documented the set-up, beginning, and process. The water first drained in small streams from top towards the storm sewer (Fig. 4a), but it soon changed to a broad sheet flow that constricted towards the storm drain (Fig. 4b). The roar of the water filled cans provided one of the most dramatic aspects of the event. The sound seemed very like an icebreaker pressing forward thru icy water. It was exhilarating.



Figure 3 a & b. The shedding of water was accomplished by volunteers sweeping the cans downhill with janitorial brooms.

Capturing the event was done by photos taken by people on the ground and by Matthew Kolodziej's video camera. We also had photos of the overall watershed system and the watershed demonstration taken by a camera mounted on the Biology Department research blimp and manned by graduate student in biology, Heath Garris.

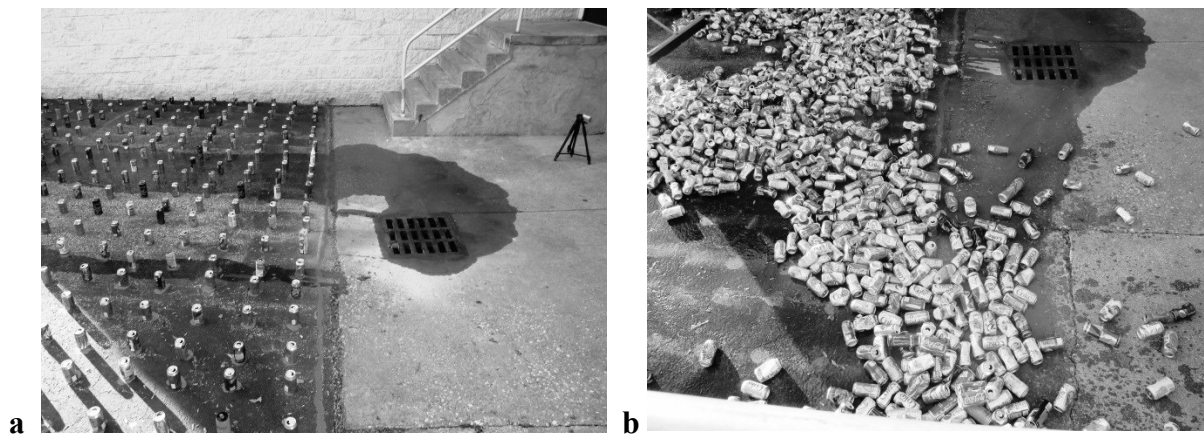


Figure 4 a & b

A video of the event was posted on YouTube, a website, called “Land Water”, was set up by Hartman and a departmental lecture was given at Rutgers.

Results

The event can be evaluated in a number of ways. We drew volunteers from the College of Engineering School, the Buchtel College of Arts and Sciences, Myers School of Art, Cuyahoga Community College and the public. The cross section of ages and backgrounds energized the event and promoted wide ranging discussion about the work and the results.

The act of marking/painting the parking lot brought attention to many overlooked details of a site that many pass through regularly and look at rarely (Fig. 5). Not only was the attention focused on the parking lot during the event, but the markings lasted for at least two more weeks – fading away and smearing with rain and sun. This generated observation and discussion far beyond the collection of volunteers and observers on the days of the Watershed Event.

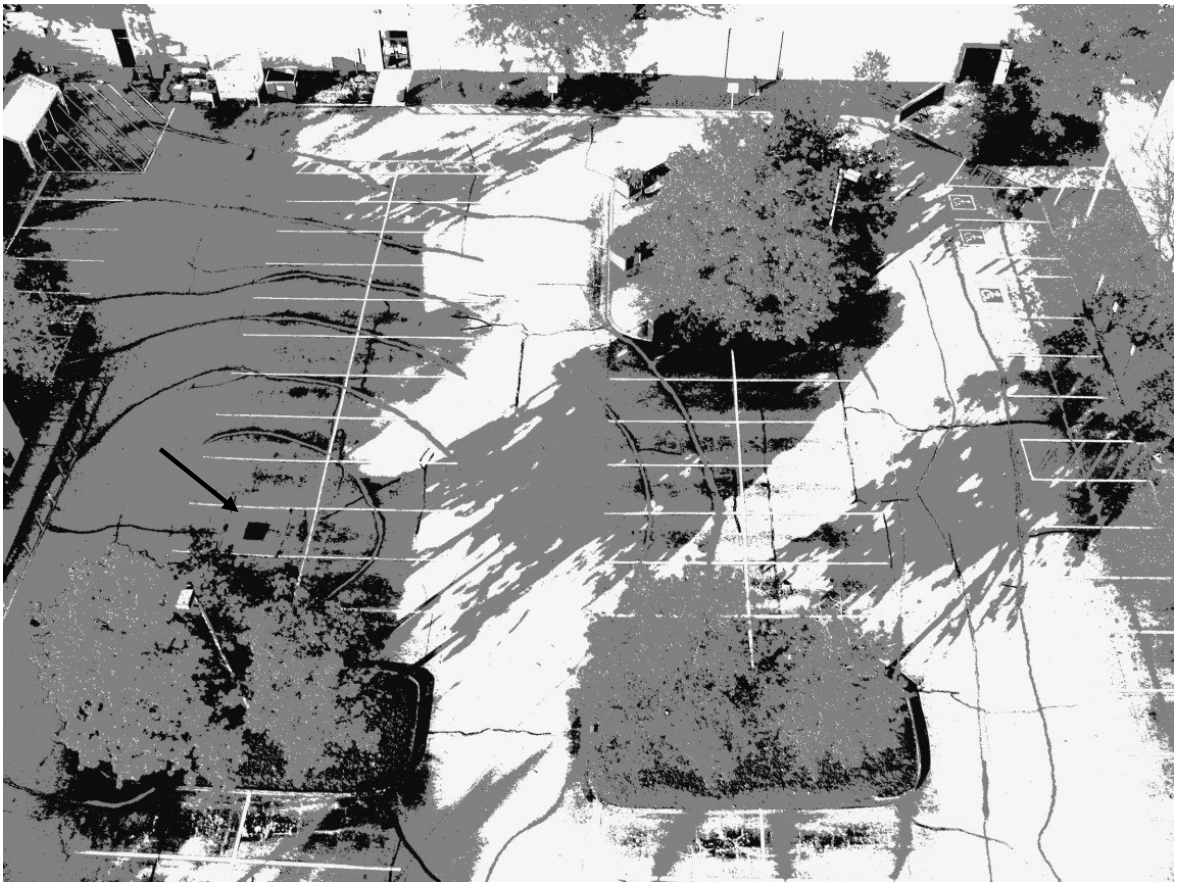


Figure 5. The storm drain (noted by arrow on left of picture) appears as the center of concentric contour lines in this section of the parking lot.

The initial concern that the lines defining the watershed would confuse those using the lot for parking gave way to regret that the lines would soon disappear. The two systems of lines did not

negate one another. They seemed to exist in contrast and harmony. This reveals how systems like parking lots perform more than one task at a time.

In addition to running and hosting the event, we photographed it and one of our colleagues recorded a video. It is this archive of the event that has had the broadest impact. During an exhibition at the Sculpture Center, Cleveland, OH, a slideshow loop was run and viewed by many of visitors. A lecture to the Department of Landscape Architecture at Rutgers focused on Watershed Event I. After discussing Watershed Event I in a planning class, the students decided to create Watershed Event II. Their idea of exceeding the experiential learning in the first event generated discussion, energy, and carry-through.

Discussion

This project can be perceived as a teaching module or an environmental art project. As the former, it provided a quantitative demonstration (Fig. 6) of a process that occurs at much larger scales throughout our landscape. As the latter, it gained a larger and receptive audience. The paint lasted for nearly two weeks in the parking lot and, therefore, could continue to generate discussion after the event was over. It serves as an example of the spatial thinking that must be applied to landscape problems as well as a small step towards making this kind of thinking more accessible to the general population.



Figure 6. The volume of cans was the lasting visible evidence of the volume of water shed.

Small modifications could be made to this project to emphasize potential benefits of a greenway system to the ecological function of a watershed or large area, especially as they relate to storm water planning or water quality improvement.

This project might also create awareness of the existence of watershed processes in smaller greenway systems by pointing out the ways in which those smaller watersheds enhance and define the larger systems and ways in which the smaller green areas, for example around schools and campuses, enhance and define the larger systems.

Once you look closely at a parking lot, you see that it is designed for flow of vehicles, storage of vehicles, flow of water, and removal of snow; all these are constituents of a safety plan. In the best cases, parking lots also provide safe spaces for pedestrian flow, safe places for pedestrian waiting, plantings to mitigate the heat build-up of summers, and drainage systems that re-use rather than discharge precipitation.

Mapping has emerged as one of the most important processes or ways of thinking in the art world (Harmon 2009). Maps are made of every conceivable space, event and feeling and of every conceivable media. Site specific, temporary art works have emerged to allow us to see a place or space in a new way. Our avenue into mapping occurred during talks with the Synapse, a newly formed group made up of artists and scientists, when we all realized that mapping was one of the few ways that we might be able to make sense of many of the water issues we were trying to come to terms with. We had set ourselves the task of finding ways in which artists and scientists could collaborate on projects about water; we found that the invisible aspects of water rather than water as landscape element was most challenging and interesting. For the uninitiated map-maker the scale of 1 to 1 is the most comprehensible. Though it is seldom practical, it was effective in this case in allowing visualization of the paths taken by water across the parking lots. It had the additional advantage of challenging us to make the biggest drawing we had ever created. It was both site specific and temporary, allowing us to see the Myers School of Art and its surrounds in a new way.

The parking lot itself was also a subject matter in the artwork.

The ancient Egyptians organized their life and their gods in reference to the life giving Nile. Colonial New Englanders organized their village life around the axis mundi of the meetinghouse, the place that manifested their connection to the cosmos. Although it happens just below the level of awareness, the parking space probably generates the most significant sense of personal and social place in the cosmos for today's urban Americans/ it is their major axis mundi. Paul Groth (as quoted in Ben-Joseph 2012).

Although the topographic lines on the parking lot surface logically describe the elevations and therefore the path of rain water movement across the lot, they also create a lyrical drawing and suggest, subtly, an unresolved conflict between man and nature.

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