

As watershaping moves toward new creative frontiers, the trade is approaching a point where it's tough to set a boundary between craft and art. One who clearly has crossed the line into fine art is modernist sculptor Barton Rubenstein, who uses water to create a range of intriguing aesthetic experiences. They might not look like other watershapes, but he insists that the physical and aesthetic principles he applies are all quite familiar.

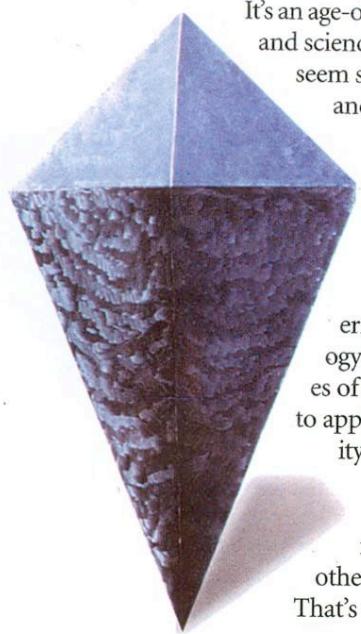
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By Barton Rubenstein



It's an age-old paradox, this relationship between art and science. On the face of it, things artistic may seem solely the realm of high-flying thinkers and philosophers who spend their days at the far reaches of interpretation and meaning. By contrast, engineers and scientists would seem to be dealing purely in the certainties of what is quantifiable and real.

The truth is, I don't know of a modern art form that doesn't involve technology of some kind. Conversely, most branches of modern science call upon researchers to apply a great deal of intuition and creativity to the processes of exploration and discovery. In other words, neither the arts nor the sciences could exist without ideas and disciplines derived from the other.

That's especially true when it comes to water

systems. Whether created for aesthetic or recreational purposes, art and science can come together here in a particularly compelling and interesting way. By combining technical disciplines with aesthetic sensibilities, I believe that watershapers of all sorts can create works of tremendous emotional impact and enduring beauty.

One of the keys to success is developing an understanding of how what we *know* can be used to influence the way we *feel*.

INTO THE MYSTIC

In my own work, I strive to blend the technical disciplines of hydraulics, visual science and materials science with the almost mystical powers found in the sights and sounds of running water. In



so doing, I create what I call “water and kinetic sculpture.”

And while my own particular form of watershaping may at a glance seem a far cry from building swimming pools or fountains, I’m convinced that the technical and aesthetic principles at play apply across the spectrum.

Before I turned to sculpture, I was a scientist and mathematician. For years, I studied a branch of mathematics and neuroscience known as “visual psychophysics,” and much of my research focused on how the human mind receives visual information – and how, as a result, we perceive patterns, motion and depth. Basically, I was using mathematics to measure and understand how it is we actually see things.

One of the most compelling things I learned is that somewhere around 40% of the human brain is dedicated to the visual system. On the most basic level, this means that the quickest way to reach someone’s brain is through the eyes. This is *very* good

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Legs

In designing my pieces to create a sense of curiosity and surprise, I put a tremendous amount of time, energy and experimentation into manipulating the ways in which water moves, divides, conjoins, falls and sheets around, over and within the solid components of a sculpture.

Here, water glides down two trapezoidal and cantilevered faces – and the flow tapers because of the relationship between the metal surface and the surface tension of the water. This has the effect of making the surfaces of the legs, which appear so sturdy and fixed in place, constantly shimmer beneath the steady flow of water.

My fascination with water isn’t rooted entirely in theoretical terrain. In fact, I spend a lot of my free time canoeing through wilderness lakes and rivers of Florida, Maine and Canada. As if some mysterious primordial force is at work, the sight and sound of water as it flows penetrates and mesmerizes me like nothing else.

That experience of nature – the beauty of waterfalls cascading into a raging river – is what inspires this bronze sculpture, which demonstrates how the delicate flow of numerous water sources can quickly become a formidable and unified force.



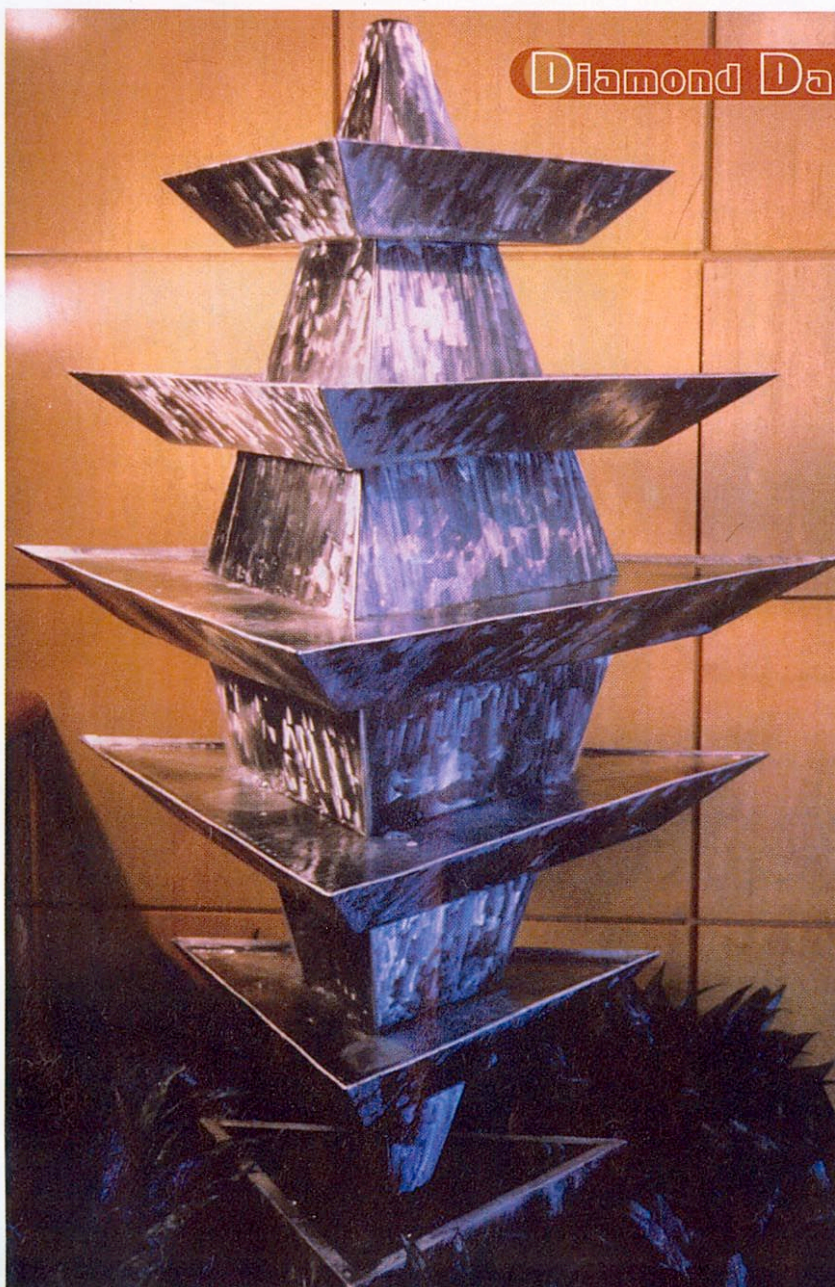
River Twist

The beauty of using water as a sculptural element is that it immediately penetrates the consciousness in a way that other materials do not. It is immediately experienced on an intuitive and emotional level in a brief span of time, especially when it reflects other organic forms with which we all are familiar on one level or another.

In this piece, essential biology is suggested as water drops out of two chutes, down through small gullies, into an elliptical pond and, finally, over the edge into a catch basin. Enhancing the effects of the water in motion, I used a special mica-embedded dust on the blue/green patina to create a shimmering effect.



Fallopia



Diamond Dance

As a designer, I typically choose a particular water pattern, such as a sheet or a misty rain shower, and then build the more physical sculpture around it. As is true of all watershaping, this calls for knowledge of several disciplines, from plumbing and electrical systems to engineering and hydrodynamics.

In this in-door sculpture, I called on every one of those disciplines as water streams down the face of the large central diamond, temporarily coming to rest on a series of water tables. Wave patterns created by the carefully controlled flow of water across these tables reflect upward, causing the entire piece to undulate and "dance."

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news for those of us who create things that are meant to be seen.

In addition to being seen, I want my sculptures to be *experienced*. I seek to create layers of perception and understanding in different people at different times. I want people who view my sculptures to conjure thoughts and feelings as a result of what they see – and hear. Of course, these impressions can be evoked in many different ways; in my case, I've chosen to put the central focus on *water*.

The actual structures are made of metal, stone and glass and tend toward geometric forms that the experts classify as “modernist.” As you'll see in the photographs that accompany this article, some pieces are based on a distinct theme or idea, while others are more abstract. Many of my pieces have moving parts that interact with water or wind; in others cases, however, the only thing that moves is the water.

When you break it down into specific behaviors and patterns that science can quantify, you see that water behaves in certain ways when placed in specific physical conditions. Using an understanding of surface tension, basic hydraulics, sound and visual phenomena, we can manipulate these characteristics in different ways through design and use of technology. In other words, the behavior of water in a controlled system is something we can *design, measure* and (if only to a point) *predict*.

ORDER AND CHAOS

To me, this is where the use of water becomes most fascinating. In fact, there's a long-standing debate in the scientific community about the nature of patterns and chaos, and water provides a perfect example of how nature can give

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In my work, I often use simple shapes, basically because I enjoy simplicity in artistic expression and because these simple shapes provide an uncluttered space in which water shows itself off to best effect.

The Hebrew phrase *L'Dor V'Dor* means “from generation to generation,” and the piece symbolizes the life source (water) for each generation (as represented by the star shapes) and how this energy is passed down through the generations. Building the effect, the flow of water causes the shapes to rotate slowly as the generational energy gradually passes from level to level.



Crossroads

Often, the impressions made by a modernist work of art don't take a lot of intellectualizing: All you have to do is stand there and look at it to enjoy the experience on some level. In other words, understanding isn't necessary to enjoying the experience itself.

That's the case here in a sculpture in which water emerges from the tops of these stainless steel shapes and gently flows down the sides, distorting and enlivening the reflections of the surrounding area. You could make a case that the subtle modern design of the piece contrasts with and lends dignity to the classic architecture of the nearby buildings, but I wonder: If the experience is pleasurable on its own, is making the historical connection necessary?

The potential contrast of situating a modern sculpture next to a classical building was an important consideration. The building is located in a National Historic District, and after reviewing various designs, the committee overseeing the project and I decided that placing a sculpture of this genre could actually *connect* the older building to the modern life now thriving in the area.



Dash & Refusal

By using moving water, I believe I'm able to draw attention to both the motion and the sense of time that results – and, by way of contrast, also emphasize the fixed elements within the work.

Here, mounted on limestone, are seven bronze components complemented by water streaming down the plain stone face. The bronze framing is equipped with lower main basins and pumps that push the water to the top basins from which it overflows. This all looks like a simple abstraction – until you notice that the negative space between the components offers profiles of human figures, one on the run and one standing in repose.

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us both simultaneously.

While anyone can predict certain outcomes with water – it will flow down a trough, for example, or it will fall as a sheet for a certain distance – as a fluid medium, water overwhelms these predictable outcomes very quickly. A laminar effect with water, for instance, can only be predicted accurately and measured for a very few seconds over very short distances before the coherent flow breaks down and the water dissociates into a chaotic spray.

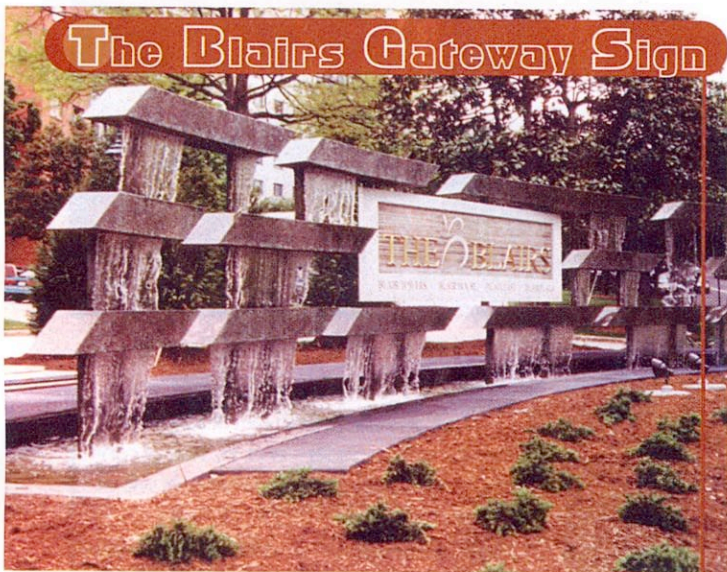
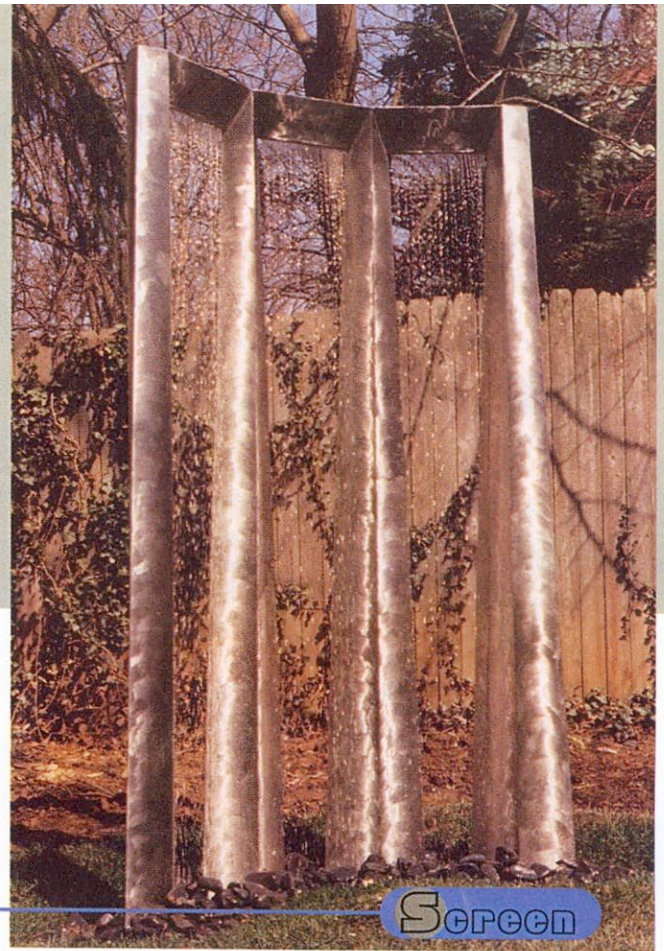
So I know going in that, in works such as mine (or other designs that seek to contain water for a specific aesthetic effect), the outcome is really only *partially* predictable.

This variability and tendency toward chaos influences every-

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Because so much goes on subconsciously when viewing water, I think that making the outward appearance of a sculpture simple helps to bring the experience provided by the water closer to the person viewing it.

Here, simple sheets of rain fall between tall, stainless steel columns. It couldn't be much simpler, but set among trees, it becomes a portal that literally tempts the observer to step up to (and through?) the gentle cascade.



To my mind, the juxtaposition of water (ever-moving and ever-changing) with materials that appear permanently fixed in place is extremely compelling.

Sometimes that juxtaposition can be startling, as with this large outdoor sculpture, which stands alongside the main sign of a large apartment complex. This piece incorporates numerous rectangular shapes of varying lengths, positioned on three levels. Ragged sheets of water pass between the levels, obscuring the view of the support struts – thereby creating the vague sense that the shapes are floating.

Behind every good water effect, it seems, is a properly engineered catch basin and an accurately sized and powered circulating system to drive the effects to perfection.

That was definitely the case here, where a water curtain drops from a top armature equipped with an internal baffling system to ensure smooth, curtain-like flow over a graceful, high-tech assemblage of shapes. Adding to the effect, the falling water makes the different geometric shapes rotate at varying rates.





TOWER

The classic fountains that contain sculpture (such as the Trevi Fountain in Rome, depicted on the cover of the June/July 2000 issue of this magazine) are so compelling to the observer because we see the moving water elements as they exist in each passing moment as well as figures that endure motionless for centuries.

This was among the inspirations for this tall structure, in which water rains down through hundreds of holes inside and outside a series of triangular belts – a neoclassical restatement of the relationship between fixed shapes and a changing environment.

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thing I do, and the process is further complicated by the fact that the work is usually placed outdoors, where wind, temperature, humidity, the time of year and even the time of day has an effect on the way water looks and acts in my “controlled” systems. These random influences mean that water, when used as a sculptural material, provides both predictable patterns and random textures.

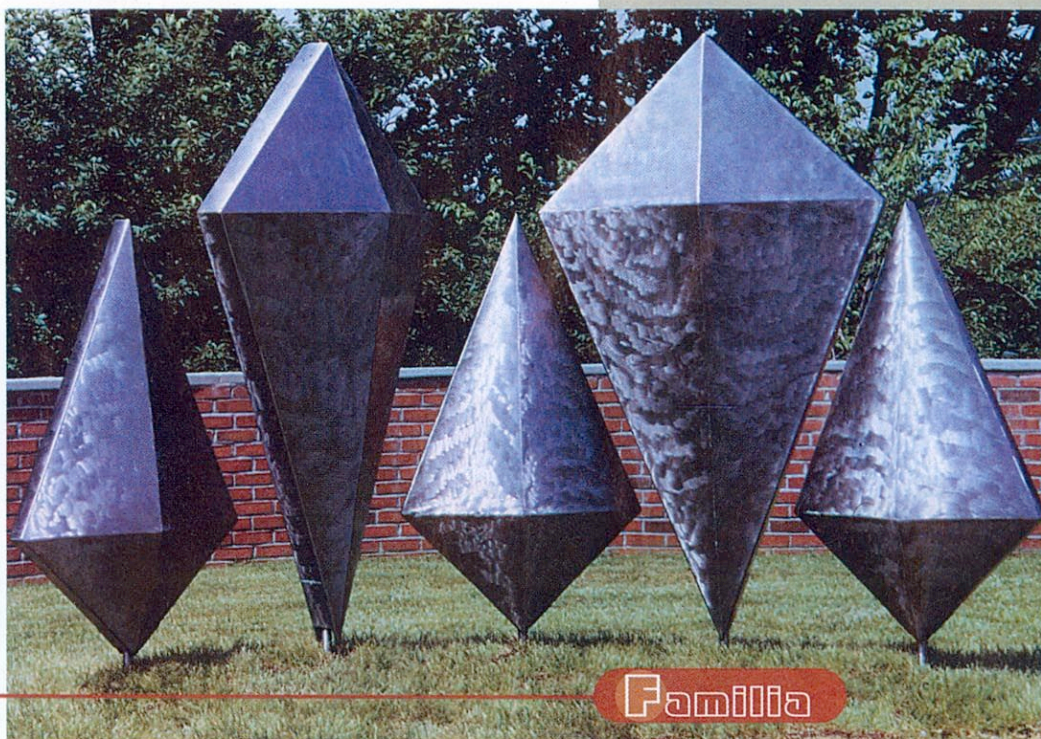
In that sense, water gives us the best of both sides of the order/chaos paradox.

All of these generalizations about art, science, chaos, order, simplicity and technology don’t mean much until you actually get inside the experience of a waterfall, a rushing river, a graceful fountain or a watershaping sculpture – which is why I’m going to let the photographs and captions on these pages tell the rest of the story.

Clearly, there’s a shortcoming in the fact that these are still photos rather than videos (which are available upon request by e-mail – bartsher@aol.com – or at my web site, www.rubensteinstudios.com), but I think they’ll give you a good idea of what I mean when I discuss the raw power of water in motion. It can be a true art form – and one not beyond the reach of talented watershapers.

The thing I enjoy most about being an artist and watershaper is the fact that I get to create experiences for other people to enjoy.

I’ve added this image to the article simply because I think you’ll enjoy it – even though it doesn’t involve a drop of water. Instead, it relies on the wind to turn these five diamond-shaped objects on their spindly vertical axes. They nearly touch as they float and rotate – but not quite.



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