

Inside: Brian Van Bower on a 'Natural' Trend

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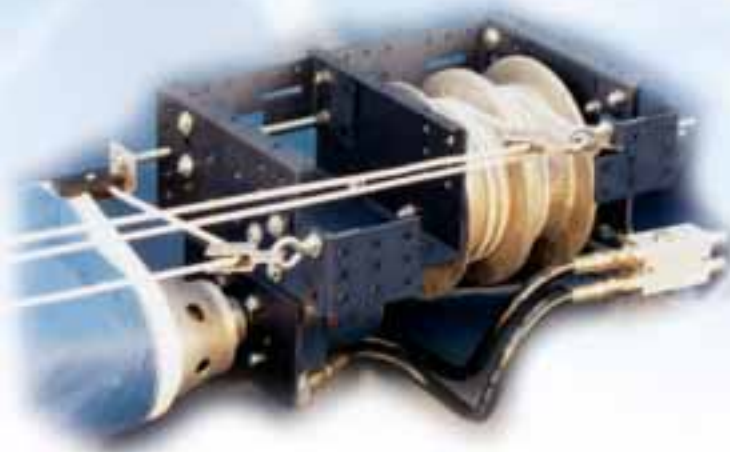
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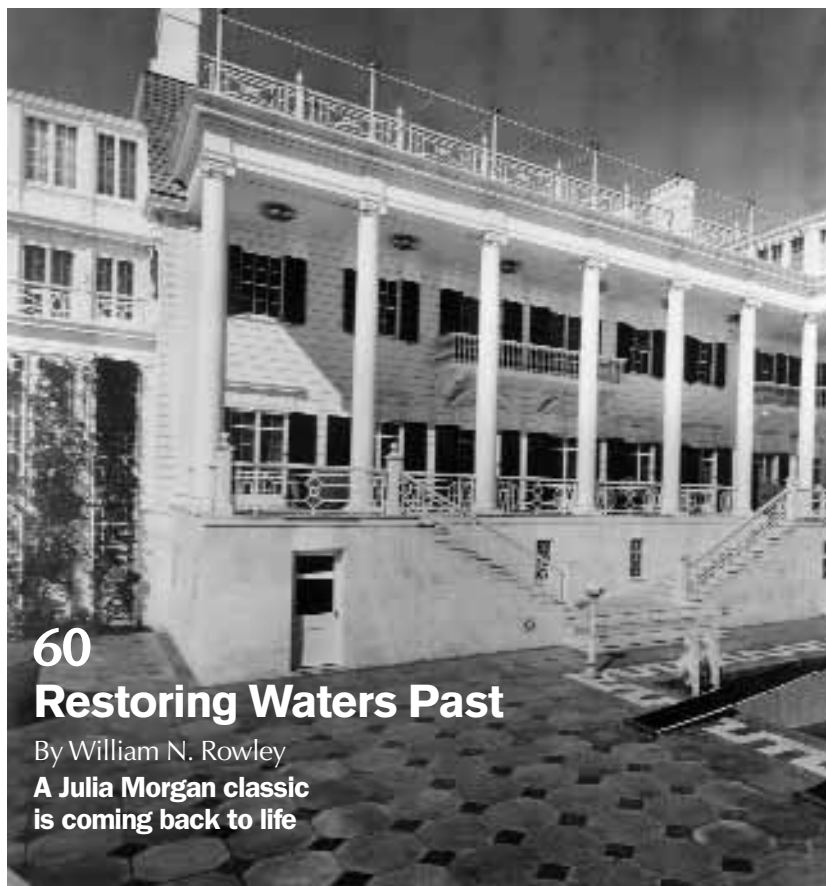
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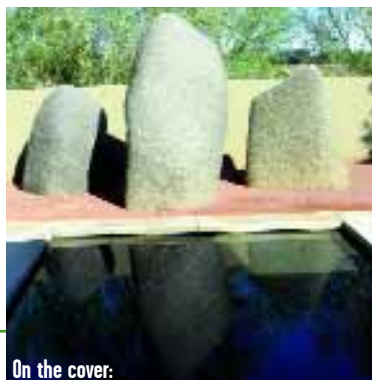
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Photo courtesy Roger Hopkins, Palm Springs, Calif.

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By Eric Herman

Elemental Insights

Sometimes the simplest ideas shine the most brilliantly.

Take water, for example: For all the complexity of “shaping” it with hydraulics, chemistry, structural engineering and dealing with the hard-line issues of technology and craft, it’s the hypnotic, aesthetic and even spiritual qualities of the material that ultimately turn watershaping into art.

Watershapers aren’t alone in pursuing those qualities, as great artists and creative minds have always used nature as a primary source of inspiration. One might even say that the endless variety, subtlety and surprises found in natural materials and settings couldn’t be conjured by the human mind without nature’s being there as a guide.

In that sense, true creativity comes from allowing the natural world to inspire and incite – an interaction that takes many forms, as can be seen in two features in this issue of *WaterShapes*. As can further be seen, the form in which that inspiration materializes and the observation of nature influences the art can come from near-opposite perspectives.

Let’s start with “Primitive Modern” by Roger Hopkins (page 32): Here we take a peek into the work, philosophy and wry humor of one the most inventive stone sculptors working today – a tremendously talented guy who creates his rugged fountains and sculptures in the desert heart of California’s Coachella Valley. Some of his works involve water, others don’t, but all are fascinating examples of how natural observation may be used to drive design.

It bears mentioning that Hopkins is something of a celebrity, having appeared on three episodes of the PBS nature/science series “Nova” as one among a cadre of artists, archaeologists and historians who have tried to figure out how the Egyptians raised their massive stone obelisks and built the pyramids. His current “day job” has him applying the grand traditions of stone sculpting to create uniquely abstract works of organic art – a form defined almost entirely by his appreciation for the interactions of light, stone and water.

On the far extreme of the natural world (but in a fascinatingly similar vein), there’s “Light Dances” by David Knox (page 50). The author spent many years in researching and developing new lasers for industrial applications, but these days his firm is engaged in manufacturing a wonderfully intriguing form of glass tile.

In this discussion, Knox describes how he uses his refined awareness of the properties of light to create his intensely subtle products, then broadens the coverage to demonstrate how these same principles are in play in every watershape and indeed in just about every visually creative pursuit in which human beings engage.

If this all sounds heavy, what amazes me is how warm and entertaining these discussions are while making serious points about nature, art and artists. These are men who know how to communicate complex concepts with an ease and persuasiveness that is both disarming and, in my opinion, thoroughly enjoyable.

In both cases, the prime lesson we can take away from their stories is that by learning to “see” the world around us in new and different ways, we are empowered to uncover great works of beauty on our own.

It’s inspiring stuff – enjoy!



For the record: In our April 2006 issue, we inadvertently credited the cover photograph and all images in the main text of Claire Kahn Tuttle’s article, “At the Heart of the City,” to Ira Kahn. Instead, those credits both should have read: Photos courtesy WET Design, Sun Valley, Calif.

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Roger Hopkins has been a stone sculptor and landscape artist in Palm Springs, Calif., for the past seven years. For the previous 30 years, he was a stonemason in Massachusetts, working on everything from modest dwellings to elaborate estates. In that time, he developed a reputation for expertise that came to the attention of the producers of two PBS series, "This Old House" and "The Victory Garden," on which he became a frequent participant. More recently, he served as a member of highly specialized design teams for the PBS science series "Nova," where he and others tried to figure out how the Egyptian pyramids, obelisks and other large stone structures were built. Through the years, Hopkins developed his skills as a sculptor by installing at least one of his creations on every landscape job he designed and built. He now specializes in sculptures that can be useful

in homes or play major roles in any landscaped space.

Beth Hamil is director of commercial aquatics and regulatory compliance and integration for DEL Ozone, a manufacturer based in San Luis Obispo, Calif. She holds a degree in nursing from the New Hampshire Institute of Technology and, since joining the pool and spa industry in 1978, has continued her education with coursework in engineering, chemistry and microbiology. She started in the ozone-generation business in 1982 and since then has played key roles in developing (among other things) the first UL-approved ozone systems for residential swimming pools and spas as well as systems for the food processing industry and the treatment of large zoological exhibits.

David Knox is president and founder of



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Interested in writing for WaterShapes on design, engineering or construction topics? Contact Eric Herman at (714) 449-1905!

Lightstreams, a manufacturer of specialized glass tile in Mountain View, Calif. He earned bachelor's degrees in art history and American studies from Connecticut College in 1978. Following stints on Wall Street and beyond, he established Directed Light, a laser-systems development and manufacturing firm in San Jose, Calif., and pursued additional studies in mathematics and optics. During the 1980s and '90s, the company made lasers for a veritable "who's who" list of major technology firms, including Hewlett Packard, Motorola, Raytheon and Hughes Aircraft. He sold the firm in 1998 and continued to consult for the laser industry until 2002, when he changed career directions and began applying his knowledge of lasers and optics to the manufacture of glass tile.

William N. Rowley, PhD, is founder of Rowley International, an aquatic consulting,

design and engineering firm based in Palos Verdes Estates, Calif. One of the world's leading designers of large commercial and competition pools, his most notable projects include partial designs for the competition pools used in the Olympic Games in Munich (1968) and Montreal (1972), and he acted as aquatic consultant for the design of the Olympic Pool Complex in Los Angeles (1984). His projects also have included a wide range of non-competition pools, including the White House pool in Washington, the Navy Basic Underwater Demolition Training Tank in Coronado, Calif., and the resort pool at the Hyatt Regency at Kaanapali Beach on Maui. Dr. Rowley is involved in a range of local, state and federal entities for which he consults on construction and safety-code requirements and was recently named a fellow of the American Society of Mechanical Engineers.

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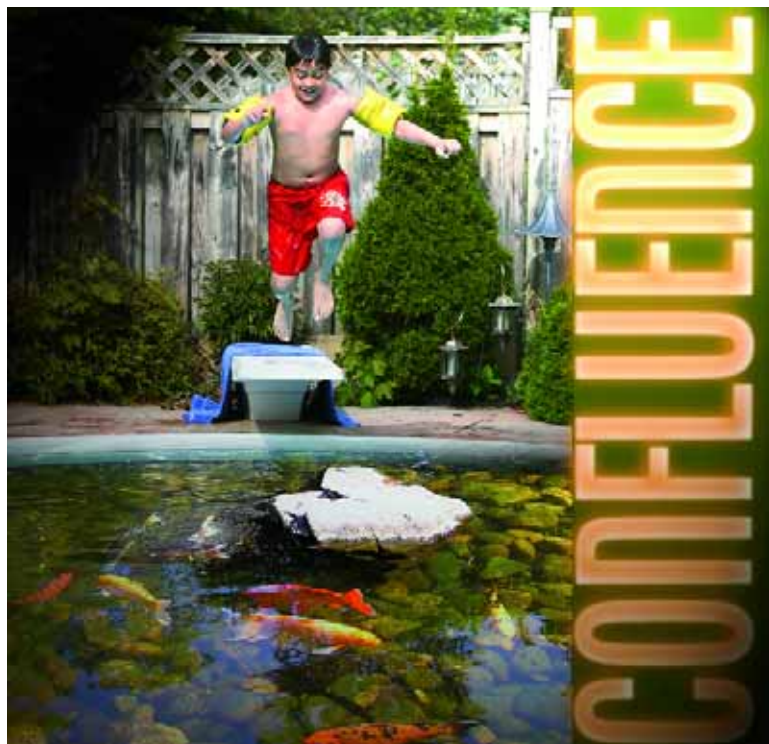
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By Brian Van Bower

Where the Waters Meet



I've been using the word "confluence" a lot lately – so often, in fact, that I decided to look it up to be sure that I wasn't misusing it in some way.

According to Webster, the first definition of confluence is "a flowing together of two or more streams," with a second meaning of "a gathering, flowing, or meeting together at one juncture or point." To me, it's a perfect word to describe a trend that's redefining the watershaping industries – that is, a growing confluence between the pool/spa and pond/stream industries.

Coming from the pool/spa side of the discussion, I can recall a time not very long ago when ponds and streams were only rarely if ever considered by anyone in my business. What could pools and spas possibly have in common with purely decorative bodies of water that weren't even chemically treated?

In those days – which I stress again were *not* so long ago – it was almost as though the discipline of stream craft didn't exist. Even stranger was the thought that anyone who was into ponds and streams might ever consider getting into building pools or spas.

Today, of course, all that has changed: The pond and stream industry has literally exploded during the past few years to a point where an increasing per-

The beauty and tranquility of ponds and streams and the ability they give people to raise their own fish and aquatic plants has a profound, widespread appeal.

centage of home and commercial-property owners who are entranced by the thought of having their own bodies of water are considering ponds and streams right up there with (or often *instead* of) swimming pools and spas.

obtuse parallels

To verify this point, I don't need to look any farther than my own business, where I've seen an increasing number of clients ask for ponds and streams as part of my scope of work. I've noticed this with some commercial projects, but this interest is especially pronounced in the residential realm.

For all of these clients, the beauty and tranquility of ponds and streams and the ability they give people to raise their own fish and aquatic plants has a profound, widespread appeal. It's almost reached a level where these naturalistic watershapes are as much on my clients' minds as pools and spas.

I'm excited by this trend: To my way of thinking, it expands the range of ways water can be used to make my clients happy and has opened up an entirely new set of creative possibilities to me in developing exterior designs. In other words, it will be a wonderful evolutionary step if we choose to embrace it as such.

When I step back and take a look at the general trends in watershaping, I see some distinct parallels – developmental histories that have touched professionals on both the naturalistic and recreational sides of watershaping and have distinct implications for anyone who seeks to work both sides of the equation.

In the case of pools, they started out early in the 20th Century as a luxury item – playthings for the rich and the province of high-end commercial properties. After World War II ended and the U.S. middle class rose in consuming



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power, an entire industry sprouted up to mass-produce swimming pools and make these vessels a big part of the suburban landscape.

That rapid proliferation resulted in an industry that for decades was predominately defined by a production mentality – an approach that in turn led to oft-cited limitations of the mainstream pool

and spa industry when it came to design, creativity and quality.

After years of seeing the product degraded, we're now in the midst of a true renaissance for the swimming pool, a time in which there's a hopeful upswing in creativity and the emergence of a new class of designers and builders who aren't shackled by the past and its cookie-cut-

ter mentality. Indeed, we're in a new era in which the best of our production can easily be seen as works of art.

rising tide

In recent times, it's been possible to see a similar set of trends in the pond/stream sector – although it's my observation that the trends are moving at an amazingly accelerated rate.

As with pools, naturalistic ponds and streams in contemporary times were the exclusive purview of the very rich and perhaps a few high-end commercial facilities – a situation that prevailed straight through to the last decade of the 20th Century. This was a realm in which watergarden artists including Anthony Archer Wills and others plied their trade and generated extraordinarily beautiful work for an exclusive clientele.

It's only in the past 10 to 15 years that ponds and streams have managed to cross over the line and grab the interest of the great middle class – a testimonial to the determination of a handful of suppliers to market a new species of watershape to the masses.

Firms including (most prominently) Aquascape Designs of St. Charles, Ill., have succeeded in nurturing consumer demand while training a large contingent of installers. Greg Wittstock of Aquascape Designs is indeed a bold marketer who may be personally responsible for the fact that thousands of affordable ponds and streams now grace homes across America.

That said, the rapidity with which the pond/stream market has emerged has brought its share of negatives. As with the explosion of the affordable-pool market in the 1950s and '60s, so, too, the growth in the market for affordable ponds has led to the emergence of a class of products that is too often less than it could or should be.

To many landscape artists, these easily and quickly installed ponds and streams stand out for their lack of imagination and questionable standards of construction. In other words, just as was the case in the pool industry, the advent of affordable ponds and streams has resulted in the proliferation of hack installers working on the fly. By now we've all heard

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horror stories about failed jobs and systems that are impossible to maintain – a sad tune all too familiar to dignified players on the pool/spa side of things.

much the same

Given the longer perspective of the pool industry's evolution and more recent renaissance, it's hard to think that the

pond/stream sector could have encapsulated that entire growth curve in a span as short as a decade or so, but that is what seems to be happening.

What we see already is a desire on the part of some of our most discerning clients to obtain custom, naturalistic ponds and streams that are creatively designed, expertly installed and reliably sustainable.

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As with pools, we're now seeing ponds being elevated to an art form and its best practitioners as the logical successors to the traditions of Japanese gardening and European watergarden.

This is where I now see a great and dynamic confluence of watershaping "streams" unfolding before my eyes. More and more, I see intersections where professionals from the naturalistic watershaping arts are delving into swimming pool design and construction; likewise, there are those in the pool and spa trades who have embraced ponds and streams with equally deliberate enthusiasm.

As with all forms of change, those who embrace the trends will be prepared to meet and exploit new opportunities, while those who resist will find themselves stuck in a status quo that may not exist much longer. Specifically in this case, I can see no logical reason to refrain from latching onto the similarities between pool and spas on the one hand, and ponds and streams on the other.

In aesthetic terms, all are deployed to give clients the beautiful, restful benefits of water, both moving and still. In technical terms, these are all systems that must reliably contain water, circulate it and make high water quality attainable. No matter the materials of construction, all must be well designed and installed, and they all have pumps, filters, skimmers and valves – and even water-treatment devices in many cases.

As important, these systems are all at their best when designed as part of an overall exterior composition, and all use reflection, the sound of moving water, visual dynamics, landscaping, rockwork, lighting and a host of other design elements in making their marks.

prime directive

To my mind, this confluence once and for all establishes what being a "water-

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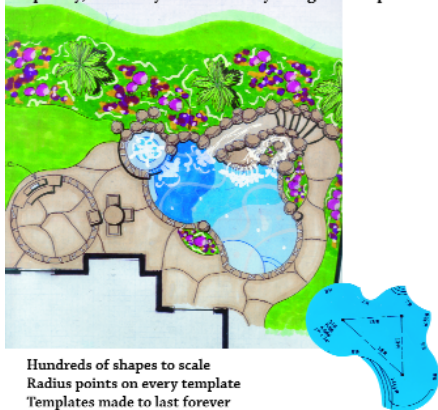
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shaper" is *really* all about, now and for the future: These days I don't consider myself so much a pool and spa designer, but rather a designer who works in the medium of water to meet my clients' needs.

Yes, I'm at an early point on the learning curve when it comes to naturalistic watershapes, but the greater my understanding of the design logic of these systems becomes, the more I'll be seeing them as a natural extension of what I've been doing for most of my career.

In other words, from whichever side of the industry we originate, there is tremendous value in accepting the full spectrum of watershaping genres and possibilities. Look at it from the clients' points of view: They know they love water and they're seeking its beauty and pleasure in their lives in whatever form makes the most sense to them at the time they make the purchase decision. It doesn't matter who delivers their watershapes or from which industry they hail: The goal is to obtain beautiful watershapes from whatever source provides them.

What I'm observing as well is that our clients are accommodating the confluence of trends with much greater speed than we probably are as watershapers. Indeed, a great many clients these days want bodies of water that fall into *both* categories.

From a business standpoint, there's nothing wrong with clients who love watershapes so much that they want the moon and stars – the beauty and tranquility of streams and ponds and the recreational, therapeutic and visual splendor of custom pools and spas. In practical terms, this broadening of scope means that growing numbers of consumers are devoting more of their resources to watershapes, a fact that spells opportunity in big, bright letters.

From a business standpoint, there's nothing wrong with clients who love watershapes so much that they want the moon and stars.

As an example, I'm currently in the design phase on a Miami project that takes this notion of a confluence to something of an extreme. It's a complicated job, so I'll just hit the high points.

The work is for a wealthy couple living on a beautifully designed, exquisitely well-maintained property on an inland waterway. The lot covers about acre and a half and features a home with wrap-around porches and open, casual architecture – a direct stylistic transplant from Key West.

It's a beautiful place that, left completely alone at this point, would stand as a fully realized example of great residential design, inside and out. The existing landscaping is immaculate, and there's an existing custom pool with expansive decks – nothing to sneer at on any level.

a time for change

The pool, which we designed originally under the project architect, is about five years old, and I have to say I like its clean, rectilinear design. It's in good shape, and although not extraordinary by any means, it's certainly well done. It's also huge – some 60-plus feet in length – and the surrounding deck areas are so expansive that it wouldn't be out of place at a fine resort.

These clients are the kind who are always tinkering with their surroundings, and it's clear to me that what they want is to find their way to a new design that aligns more closely with the natural splendor of south Florida and its lifestyles. In other words, they want to rip out the pool, decking and much of the surrounding landscape and start all over – a process with which they seem experienced and right at home.

What's unique about them is their desire to make a saltwater pond/stream composition the primary feature of the reworked setting – a place where they can maintain a stock of ocean-going fish.

We're far from finished with the design process, but I know already that there will be a relatively large stream that will be woven through gardens, paths and decks. Portions of the stream closest to the home will be edged with coral in a quasi-architectural style, while the far reaches will be bordered with rustic, lushly planted berms

to provide layered views and senses of both privacy and depth.

The fact that it's going to be a saltwater stream is interesting enough, but the real kick here is that the reason we're taking out a viable swimming pool at significant expense is that they want to replace it with a *new* pool that visually echoes and harmonizes with the stream/pond system. In other words, the presence of the naturalistic body of water is driving the swimming pool design, with all design cues emerging from the look of the naturalistic waterscape.

Deep down, I think that if these clients were forced for some reason to pick which watershape was more essential to their re-imagined vision of the space, the pool would come in a distant second to the stream and pond. They still want all the beauty, luxury, interest and recreation that pools and spas have to offer, but they're more committed to a naturalistic composition – and are willing to dedicate significant resources into realizing their vision.

It's a fascinating project and a new approach that's forcing me to embrace naturalistic design in all new ways. It has also led me to collaborate with a landscape designer to execute the work – in this case, a talented professional from Miami named Debra DeMarco.

coming together

This Miami project is just one of many recent examples in which naturalistic watershapes are major features in my work, and it boggles my mind to think that there are people in the pool and spa industry who have yet to perceive and on some level embrace this trend.

There are plenty of educational opportunities out there that can help all of us get up to speed, so that's no excuse. Indeed, all it takes is opening our eyes to the great traditions of naturalistic water-shaping to see that what has gone before speaks volumes about what can be done today. And the best thing from my pool/spa perspective is that almost all of the pond/stream features are neatly related to work I've been doing throughout my career.

My conversations with people from the green side of things tells me they're on the

same track and now see opportunities in designing and installing pools and spas as parts of their projects. Some might view this intermingling of industries as a threat; I choose to view it as a wonderful opportunity to become more ambitious and inclusive than I already am – and make some of my best clients even happier along the way. **WS**

Brian Van Bower runs Aquatic Consultants, a design firm based in Miami, Fla., and is a co-founder of the Genesis 3 Design Group; dedicated to top-of-the-line performance in aquatic design and construction, this organization conducts schools for like-minded pool designers and builders. He can be reached at bvanbower@aol.com.

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By Stephanie Rose

Class in the Tropics



I recently had the pleasure of taking a brief trip to Costa Rica. Beyond a little sightseeing and some rest and relaxation, my purpose was to consult with watershaper Juan Roca to determine the feasibility of creating planting plans to complement his incredible watershapes.

I always do my homework when I travel to an unfamiliar area for business purposes, learning as much as I can ahead of time about local vegetation and climate. As a rule, I contact nurseries, check inventories, inquire about the possibilities of bringing in plants the nurseries may not already carry and in general try to figure out the plusses and minuses I might encounter in new and unfamiliar territory.

I prepared myself as usual in the weeks leading up to this trip, but distance and language barriers were definitely an issue: Once I arrived, I found that I'd actually amassed a good bit of misinformation about the state of the nursery trade in Guanacaste, the region in which Juan resides, and soon recognized several other factors I had not been able to anticipate.

Let me tell you more about my trip, which, by the time it ended, had me thinking differently about the approach I take to *truly* long-distance projects.

gathering information

Before boarding the plane, I'd already heard multiple accounts of Costa

I always do my homework when I travel to an unfamiliar area for business purposes, learning as much as I can ahead of time about local vegetation and climate.

Rica's near-legendary beauty as well as tales of bumpy dirt roads that make getting from place to place difficult.

Mostly, friends who'd traveled in the region told me about rainforests that can be viewed from the canopies of trees on high-wire "zip tours" and coastlines that leave everyone breathless. I heard about the wildlife – howler monkeys and their bellowing calls, bullfrogs the size of bowling balls, lizards as plentiful as squirrels and a whole host of other natural wonders that draw visitors from all over the world to this Central American paradise.

I was also privileged to witness a few of the most colorful and picturesque sunsets I've ever seen: Not only were they visually stunning, but they also signaled the end of *very* hot days in a place where the climate is *definitely* tropical. (The country is situated between eight and 11 degrees north latitude compared to Los Angeles at about the 33rd parallel.) Although there are a number of sub-climates, I'm told that in the area where Juan lives and works the average daily temperature varies year 'round by no more than five degrees – typically somewhere in the 90s.

As a landscape designer, what this means to me is that my plant palette will be limited to specimens that can survive 365 days of heat, wind, humidity and other factors that might kill more tender perennials or plants that require cooler temperatures at least part of the year. This alone narrows my choices and has fundamentally altered my thinking.

first things first

When confronted by a situation as new as this one, there's no substitute for opening your eyes and looking around. Accordingly, I began my work by observing the trees and plants

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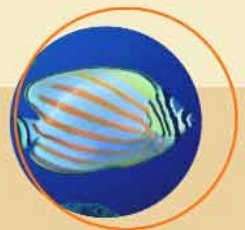
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at Juan's home.

There are the typical palms, bougainvilleas and tropical plants one might expect to see in such a location, but upon further investigation and discussion with my hosts, I learned that many of the plant varieties I was looking at were not what they seemed: What I initially thought was a Bird of Paradise, for example, turned out to be a variety of Heliconia, a plant family encompassing a number of different and unusual specimens.

What struck me more than anything else about the flora were the sizes and forms of the trees in the area. Sustained by the climate, sheltered on undeveloped land and helped immeasurably by the fact that the people seem to value and appreciate their existence, it's not uncommon to see stands of old-growth trees more than 50 feet tall with driplines equal to or exceeding that span in circumference.

I am convinced, however, that they can keep their huge Ficus trees: I saw some with root systems that rose more than



I was fascinated by this 'organic' approach to fencing, in which cuttings from Naked Indian trees are simply planted, take root and, strung together with barbed wire, grow into efficient fence systems.

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three feet out of the ground and stretched more than 15 feet away from their trunks. I suppose if I had more room to work with in Los Angeles backyards, I wouldn't fear these giants so much: They *are* beautiful, but those roots are relentless!

I did find ways, however, in which tree roots were put to good use: On the first morning I was there, Juan and I went for a hike on his property, and he pointed out the interesting way the locals used the Naked Indian tree to develop fences made up of tree branches. He explained that in Costa Rica, property owners cut the branches of this tree, stick them firmly in the ground and string them together with barbed wire.

The tree is such a strong grower that it roots itself easily wherever it's placed and proceeds to grow into a full-fledged tree. During the growth process, Juan explained, the trees "eat" the barbed wire, completely enveloping it within their trunks. In this way, the trees create a visual, shaded break at the fence line, while the barbed wire delineates property boundaries and keeps livestock in, unwanted visitors out.

After Juan explained all of this to me, I began seeing these fences all over the countryside.

simply different

Armed with Juan's primer in local practicalities, I now began looking for how things were done differently in the landscapes I saw. Moving beyond the massive trees, I also began looking in particular at the way plants were arranged.

What I observed in most cases was little by way of "arrangement" at all: Although I saw visually gorgeous landscapes, there were few designs "organized" in ways that reminded me of typical North American plantings: Borders did not seem well defined; plants were frequently placed in large masses without specific connections to each other or to the overall environment; and they did not seem to be used to create visual barriers the way we use them here to block out our neighbors. It was all easy and more than a little random, but quite friendly.

Speaking of friendly, the people I met—particularly Juan, his wife Kattia and their two daughters, Nuria and Maite—made

me feel right at home. They spoke English most of the time and made me feel quite comfortable, but what I recognized almost immediately is that if I spoke Spanish, I could have opened up my experience of the place in almost limitless ways.

I never took Spanish in school (opting for French instead), and the occasion of my trip to Costa Rica is not the first time

I've felt at a disadvantage as far as my career development is concerned—particularly given the fact that this trip was intended to put me to work on some basis in a Spanish-speaking country.

The language barrier posed challenges not only on a general level, but it gave me very specific problems in communicating with nursery workers—an awkwardness

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I was relieved to find that, contrary to reports I'd heard, the nurseries we visited were not at all unlike those I visit back home: well-stocked, well-organized and ready to meet a variety of client needs.

compounded by my unexpected encounter with a whole new set of plant names.

Juan took me to a nursery where I was very pleasantly surprised (contrary to reports I'd received from my *compadres* in the United States) to find that the plants were as efficiently displayed and organized as they are back home and in most cases were tagged by yellow plant markers that included each plant's botanical and common names.

I also enjoyed the distraction of watching two howler monkeys disagree quite loudly up in the nursery's trees – and watched in horror as the apparent loser in the dispute plummeted about 15 feet to the ground with a grand thud before picking himself up and walking away, apparently none the worse for the misadventure. I was pleased to notice that I wasn't the only one mesmerized by the fray: I guess there are certain curiosities that transcend language!

looking ahead

But back to the plants: I ran into a hitch

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in that the plant's botanical names in Costa Rica are completely different from those commonly used in the United States. A *Plectranthus* here, for example, is called *Llanten* there, while what we call a *Hydrangea macrophylla* is something they call *Ortencia*.

Our *Justicia brandegeana* is their *Camarone Amarillo*, but this is the closest case I found of the Spanish name having some resemblance to the English/Latin name: *Camarone* is the Spanish word for shrimp, and this particular variety of *Justicia* is known in the United States as Shrimp Plant.

What this exercise showed me is that I will face substantial translation issues not just with respect to communicating with the people, but also more specifically in communicating about their plants. If nothing else, the experience made me appreciate the access I have back home to garden guides and other organized information resources. Without something similar at my disposal for Costa Rica, it will be difficult (but not impossible) for me to determine planting plans with any great accuracy.

Through years of living and working in southern California, I've always told myself that someday I would learn Spanish if only to make it easier to work on site with largely Spanish-speaking crews. (Along with all the other things I've vowed to do "someday," I know that when that someday finally arrives I'm going to be *very* busy.)

In this case, if things work out and I end up developing planting plans for Juan's watershape environments, I have the sense that I will have no choice and finally will need to learn Spanish in a hurry.

Juan and I have been talking for quite some time about working together, he building pools and stunning hardscapes (as seen in the December 2005 and April 2006 issues of *WaterShapes*) and me developing planting plans to complement them. During my stay, we looked at a site with an incredible home and distant ocean views, and I walked away with a camera full of "before" pictures (as I do for all my jobs) and an overall understanding of what Juan envisions for the site.

It's clear that I have my work cut out for me on this project. If I'm to perform

to my usual standards, I'll be spending a lot of time in preparation and research and in seeking ways to overcome both the language and terminological barriers. But I *do* want to make it work: I was there for just six days, and even in that short visit I felt new pathways of creativity opening that I definitely want to pursue. **WS**

Stephanie Rose runs Stephanie Rose Landscape Design in Encino, Calif. A specialist in residential garden design, her projects often include collaboration with custom pool builders. Stephanie is also an instructor on landscape design for the Genesis 3 Design Group. If you have a specific question about landscaping (or simply want to exchange ideas), e-mail her at sroseld@earthlink.net.

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By David Tisherman

Knowing Your Range



In last month's "Detail," I discussed the beginning stages of a new project that has my partner Kevin Fleming and me pretty excited. At this point, the pool's been shot and we're moving along at a good pace.

I'll pick up that project again in upcoming issues, but I've brought it up briefly here to launch into a discussion about something in our industry that mystifies me almost on a daily basis.

So far, the work we've done on the oceanfront renovation project has been focused on a relatively narrow band of design considerations having to do with the watershape and its associated structures. This focus is common in the projects I tackle – a big bite that will involve nuance and tremendous attention to detail – and represents what I've come to see, for want of a better term, as my specialty.

I'm thrilled to work in this refined, custom mode of design and building. It's not my intention to suggest that other people are nuts in the way they go about their business, but I'll certainly confess to being puzzled and amazed by people who do absolutely *everything*.

Why do I limit my focus so narrowly to custom watershape design and construction? The short answer is, *because it's complicated and requires experience, knowledge, education and talent.*

jacks of all trades

I understand that everybody has to make a living, and I've always known that there are many people in the watershaping world who make their daily bread by selling, designing and building the pool, starting it up, selling pool toys and acid and chlorine, servicing the pool, winterizing it in the fall and opening it back up in the spring. Some of these busy folks also sell pool tables, patio furniture and Christmas decorations for good measure.

The range of activities some people try to master beneath the umbrella of a single business plan is truly impressive: If you're actually succeeding in that mode – that is, you are able to do everything, and do it *well* – my hat is off to you. You're certainly much smarter, more ambitious and more talented than me.

For the majority of us, however, it's challenging enough to try to master a much narrower range of skills. In my case, I design and build pools, making key decisions about materials and how they go together and then overseeing the project in the field. I don't design landscapes (although my partner Kevin has been trained to do so and does it wonderfully), nor do I design lighting or make any attempt to offer aftermarket services or products. (The only overlapping with other trades occurs in areas that require irrigation, drainage or low-voltage lines: We stub and sleeve these lines for future access by others.)

From my perspective, mastering functions within my own chosen professional boundaries has been a life's work. I went to school for it, have worked for decades at it, traveled the world in pursuit of it and, even at this advanced stage of my career, still consistently discover new ideas, details, materials and techniques with almost every project I tackle.

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monster watershaping multi-tasker? Why do I limit my focus so narrowly to custom watershape design and construction? The short answer is, *because it's complicated and requires experience, knowledge, education and talent.* As is the case with every other form of art and creative expression, there's a lot to watershape design and construction, and much of it is

genuinely challenging, requires real effort and engages me entirely on all levels.

As my grandfather once told me, it's better to be great at one thing than it is to be good at 25 or bad at 100. I've spent a lifetime thinking about design, learning about construction and applying everything I've picked up along the way in each and every project. This current-

ly occupies about 70 hours of my time each week and doesn't leave me with lots of time to consider a cafeteria approach to the business. No, I settle for being mystified by those who have the time and energy to do even more than I.

not far enough

Then there's the flip side to this operational coin and another great source of puzzlement: Time and again through the years, I've come across contractors who are so focused that all they do is the swimming pool and/or spa – and *absolutely nothing* else. They don't even handle the hardscape immediately surrounding their watershapes or have the slightest interest in design elements that will affect the way their work will be seen and appreciated, whether it be lighting, the color of the home or the type and location of plant material.

I'm willing to concede that these folks may be competent when it comes to crafting gunite structures that contain water. (That's probably not always the case, of course, but for the sake of this discussion I'll allow that watershapers with narrow focuses do a good job.)

The problem with this approach is that these watershapes are created in a complete vacuum, sometimes pulling plans from pattern books and installing whatever emerges with no relationship to its surroundings and no design harmony. Too often, these salespeople/builders ignore design cues that might be drawn from the setting, the surrounding landscape or the home. Heck, they don't even think about the decking that will be put in later by someone else.

I could go on about this for pages, because this approach to exterior design has truly puzzled, amazed, mystified and occasionally made me laugh through the years.

To make just one point here, let's consider the simple issue of decking that's done by someone other than the watershaper: To my mind, decks and other hardscape structures associated with a watershape are part and parcel of the watershape itself. If they're not treated as such, there is literally no way on earth to nail the details, figure out how materials will physically interface with one another, or even control how they'll look next to each other.

Continued on page 28

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What happens too often as a result is that critical material transitions are left to a mason – someone who may really be good in working with stone, brick, concrete and other hardscape materials but has no background at all in design. Mind you, I work with great subcontractors, most of whom have been with me for more than 25 years. They are absolutely

the best at what they do, but not one of them would make claim to being a designer, nor would any of them be comfortable in making decisions about how a deck visually goes together with the structure of the pool and spa.

If decisions along those lines are needed, they'll let me know and I'll make the call: They know perfectly well that their

jobs are about performance, not decisions.

better yet

When you stop and consider how much money, time, thought, planning and energy some clients put into acquiring a pool, spa or other watershape, it's stunning that our industry is so often represented by its professional extremes – by the jack-of-all-trades dilettante on the one hand, or by the blinkered gunite wonk who can't see, plan or think beyond the bullnose coping and a band of blue waterline tile.

At all levels of the market, we as an industry owe our clients more than either of those possibilities, and it's time for us, as professionals, to define what we do best and operate within clear-cut, operational boundaries.

If you're going to do everything under the sun, then at least be sure that there are people within your organization who are actually and functionally capable of performing each of the given activities. If you find yourself or others in your organization designing one moment and doing leak detection or selling a pool table or offering advice on water chemistry the next, I would suggest that you're not likely an expert at any of these tasks.

Again, I offer humble praise to the rare geniuses who really are great at everything. For the rest of us, it's important that we be honest with ourselves and our clients and acknowledge where our expertise ends and the knowledge of someone else must enter the picture.

This is exactly why I work with brilliant landscape designers such as Kevin Fleming and *WaterShapes* columnist Stephanie Rose: These people have forgotten more about plants and how to use them effectively than I'll ever know. I consult with them the same way I do with lighting designers, soils experts, structural engineers, hydraulics experts and the professionals who start and service my pools. In these areas, my expertise extends to my ability to hire the best and work with them efficiently and effectively.

The skill I share with other accomplished watershapers who focus on specific areas of the design/construction process is the ability to interface my efforts with learned people from other fields. In my case, I'm

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the top dog on all of the projects I tackle and run point with the client, but I am *always* part of a team, orchestrating activities, seeing to the continuity of the project and deferring to the expertise of others.

To my mind, there is simply no other way to be a custom watershaper.

custom class

This leads me to a concluding point about boundaries and the need to be truthful about them with our clients.

I understand why people want to call what they do "custom" work: It's a distinction that usually means greater financial compensation, has a cachet of greater creativity and is generally more fun than production work. But simply calling yourself "custom" does not make it so, and the upshot is that a fine word has been used incorrectly (and far too frequently) by our industry.

To me (and, I think, to consumers), "custom" implies that the work has an original, special or otherwise unique quality. It is the result of creative thinking that

Odious Words

I am literally sickened when I hear a watershaper say anything along the lines of "I didn't want to leave any money on the table" or speak of being frustrated not to have extracted from a client every last dime a project might be worth.

That's a sales-first orientation I see as running counter to the real objective of watershape design and construction – that is, bringing beauty, elegance and visual delight to clients in ways that fit with individual settings, specific architectures and the clients' stated needs and desires.

The urge to grab for every thin dime leads to design decisions driven by a need to include features and details that seldom push a project in the right aesthetic direction. In that sense, the work done by these watershapers is the antithesis of "custom" and reflects a value system that limits insight, creativity and the genuine desire to design and build works of art.

–D.T.

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comes in response to the desires of the customers, the requirements of the setting and the designer's creative spark. It does *not* mean wielding a common bag of tricks in varying combinations or conjuring a simple veneer of originality.

Your education, background, artistic ability, experience and raw creativity determine whether you're capable of doing

custom work. Just putting the word on a business card or in an advertisement isn't enough: You need to walk the walk, not just talk the talk.

This is related to the discussion above in that I don't think it's possible to work effectively in a custom capacity if you try to do everything on the one hand or, on the other, work in isolation from everything

else that's happening on site. No, to be custom, you have to know your boundaries and work feverishly – even joyously – within those parameters to achieve something beautiful, elegant and genuinely unique.

If you're not doing that (and only you know for sure), then you're better off not claiming to be a custom designer or builder. Business 101 courses teach us to "under-promise and over-deliver": When you're claiming to be custom but are really just putting nail polish on production work, then you're actually doing the exact opposite: over-promising and under-delivering.

That's not good for your clients, your reputation or your industry, and it certainly isn't fair to professionals who actually do custom, artistic work.

My advice to both the jacks of all trades and the gunité wonks is to identify a spectrum of activities and do everything in your power to master the work within that scope. And where your efforts require you to interface beyond your expertise, seek the best people you can and develop skills in giving them what they need to do their best work.

Mostly, I urge you to look in the mirror and honestly evaluate what you see: If you're among the 90 percent who are in the business first and foremost as a way to make money, you have limited claim to the "custom" label. If you're among the 10 percent who design and/or build with passion, skill, artistry and are motivated by a sense that those who see your work will be transformed, you can wear the label with pride.

Until you manage those boundaries with respect to what you do and what you don't, how can you possibly be honest with clients and serve them to the best of your ability? We all know the answer to that question: It's up to each of us to face it honestly for ourselves. **WS**

David Tisherman is the principal in two design/construction firms: David Tisherman's Visuals of Manhattan Beach, Calif., and Liquid Design of Cherry Hill, N.J. He is also co-founder and principal instructor for Genesis 3, A Design Group, which offers education aimed at top-of-the-line performance in aquatic design and construction. He can be reached at tisherman@verizon.net



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Primitive

Sculptor and landscape artist Roger Hopkins has spent a career with stone. From investigations of the stone-working techniques of ancient Egyptians and Druids to pursuit of his own brand of primal stone sculpture, he approaches life with an exuberance, determination and wit that are evident in everything he does. Here, in words and pictures, Hopkins takes us behind the scenes for a look at his work in a genre he calls “primitive modern.”

By Roger Hopkins

Modern

I've always been conservative when it comes to guaranteeing my work, which is why I only offer a 300-year warranty on my sculptures. I'm fairly certain that the vast majority of my pieces will last well beyond that span, but there's always the possibility one might be consumed by a volcanic eruption, blown up in disaster of some sort or drowned when the ice caps melt and cover the land with water.

Those sorts of cataclysms aside, it's hard to imagine that the massive pieces of stone I use to create what I call “primitive modern” art will be compromised by much of anything the environment or human beings can throw at them.

Ultimately, that's one of the beauties of working in stone: It possesses a profound form of permanence — and there's a certain comfort that comes with knowing my work won't be blown away by wind, erod-



ed by rain or damaged by extremes of heat or cold. And given the fact that these pieces are so darn heavy, it's safe to say that most people are going to think at least twice before trying to move or abscond with them.

Beyond the personal guarantees and despite the fact I don't dwell on it too much, working with stone also has a unique ability to connect me and my clients with both the very distant past and the far distant future. Human beings have been carving stone for thousands of years, and many of those works are still with us in extraordinarily representative shape. There's little doubt that those pieces as well as those being created by stone artists today will be around far longer than we might care to imagine.

Standing in Awe

Something I *do* think about quite often is the sheer majesty and beauty of stone as it appears in our natural world and as it is used in human-influenced settings.

Stone is absolutely the most enduring of artistic and architectural materials. It's the bones of even modest gardens and the flesh of the world's largest and most enduring structures. Since the dawn of the human experience, we've hidden among stones for protection, shaped them into



primitive tools and used them to create the first known works of art.

All of this is why I've spent a lifetime falling in love and *staying* in love with stone. In working with it, I find the most elemental of connections to nature and human history. That may seem pretentious,



but when you're covered in dust, sweat, scrapes, cuts and bruises and cursing a chunk of rock you've been cutting, sawing, hammering, chiseling and cajoling for days, the fundamental nature and connectedness of stone becomes painfully real.

I wouldn't go so far as to say that, through stone, we actually come to *know* the people who touched it in the distant past as some form of creative expression, but we *do* gain a sense of continuity in our lives and a connection with the natural world. In purely artistic terms, that is why stone is so evocative: When that potency is matched with

In releasing the images bound into stones, I particularly enjoy the interplay of textures and the contrasts that emerge when I smooth certain parts of a boulder while leaving adjacent sections either rough or unfinished. This also occasionally gives me the opportunity to introduce color into my work in unique and unexpected ways.

plant material and water in a well-conceived space, we compose a setting that deeply affects other people – a fact I find endlessly intriguing and exciting.

Sculpting stone is, however, anything but an ethereal artistic experience. In many ways, in fact, it's more like an endurance test.

When I look at a boulder, I try to imagine what image or form lies within it and then figure out how to release that image or form in a way that's economical not only with respect to the cost of the piece to a client, but also my own time and the limitations of my equipment. I draw up a battle plan and go to work knowing that I'm not going to win on the first day. It takes real strength to do this, and not just strength of arm, leg and sinew, but also strength of will.

Through the years I've smashed, broken and otherwise injured so many parts



The sensations I convey by managing textures become even more pronounced when water is introduced to a composition. The motion of the water can be used to highlight changes in texture – or simply to wash across a rough surface to create a shimmering, sparkling spectacle.



Desert Solitaire

Living and working in the desert has been a life-changing experience for me. It's hot, dusty and forsaken, but it's also among the most beautiful natural settings I've ever encountered.

I moved out to the Coachella Valley for a variety of reasons (as described briefly in another sidebar on page 41), but the principal lure was the amazing black granite found in the region's quarries – that, plus the fact that land was inexpensive enough that I could set up shop in wide-open spaces that left me to enjoy the desert itself.

Out here, you learn to live with the heat, even enjoy it – although you do have to drink lots of water and avoid going in and out of air-conditioned spaces too often. In my case, I've learned to live at night in all new ways under rivers of stars. You can really get caught up in the majesty of the firmament, the plaintive cries of the coyotes and the sounds and sensations of the warm wind.

It's understandable why so many artists, writers and philosophers have found inspiration in such places. The scenery speaks for itself, but there's also a culture and lifestyle here unto itself. Since I've settled in, I've met all sorts of fascinating, intellectually diverse characters, all seemingly united by a sort of fierce individualism. There's a freedom and expansiveness of mood and emotion, and all sorts of great nightspots, too.

It's no small thing that there are very few local pleasures more satisfying than an ice-cold margarita after a long day of sweating it out in the hot sun: They just seem to taste better out here.

—R.H.

of my body that I don't keep track anymore, and I've probably inhaled enough stone dust to choke a herd of pack mules. If I've shortened my own number of days on this planet because of that struggle, I'd have to say it was a sacrifice well made. Plus, it sure beats working behind a desk in an office somewhere.

Studies in Contrast

It's self-evident that in any creative medium, the artist, designer or craftsperson has a certain range of possibilities in working with a material, sound or light. With stone, that range is actually fairly limited: Basically, there's the skin of the stone and all the things you can do with it below the surface. Beyond that, it's about textures,

shapes and the negative spaces revealed by removing portions of the original mass.

Personally, most everything I do with stone is intended in one way or another to exploit some sort of contrast.

The majority of my pieces have portions of the boulder that are left untouched in order to establish juxtapositions with a range of carved shapes, contours, textures and voids. I play it this way this for two basic reasons: First, it's hard to improve on the raw beauty of nature, and I'm perfectly happy to let that splendor take the lead for some or all of an art piece. Second, to take a chunk of stone and completely transform it into something else the way Michelangelo did, for example, is a huge amount of work.



Observers tend to have lots of preconceived notions when it comes to the way stone should be used, and I like to play with those expectations by creating pieces that are functional in unusual ways or that take on surprising organic forms.



Compared to someone like him, I'm basically a lazy person.

So instead of transforming stone into something it's not, I use the rugged, aged and wild surfaces I find to create a form, figure or space that will draw the interest of the viewer and create a perception of artistic value. That may simply mean polishing part of the surface to call out a contrast with the rough, natural surface. Or it may involve cutting away a large part of the boulder or incising the surface with geometric or organic figures. Many of my pieces feature voids, holes and portals I've drilled into the stone to invoke a dramatic contrast between air and light and the unyielding material.

In some works, I challenge the boundary of what is and isn't art by simply arranging unaltered boulders in an artistic way – or finding one I think is interesting enough as is and maybe setting it up on its end. I'm intrigued by the idea that, with the right piece of stone, the art is solely about selecting, orienting and placing the object in a landscape.

I have several projects that have consisted of multiple boulders set on end. I call these my "standing stones," and

they're usually pieces I find at a quarry that might be half buried and basically discarded. When I perceive something in a boulder's form, symmetry and aesthetic value, I'll stand it up next to others in arrangements that create a collective object of beauty and majesty (think about *Stonehenge*, for example).

Whether or not these assemblages qualify as "art" is almost irrelevant: In these cases, the stones themselves define their aesthetic value, whatever label is applied.

Functional Forms

What's happening in all of these cases is that I'm trying to be aware enough about what I'm doing to take my design cues from the material itself. I recently found this nearly round boulder, for example, and decided the best thing to do would be to cut it in half and turn it into a pair of hot-water spas. The sculpture in this case is in the internal contours that make the pieces functional – a completely different approach compared to the standing stones, but one that is equally determined by the character of the raw material.

In the case of the spas, it's an expression of a delightful form of contrast in



In some cases, I will simply arrange stones as I find them, "sculpting" them in these cases by virtue of arranging them in ways that make a statement, set up a meditative reflection or simply lend visual interest to a conventional landscape.



that I've created something useful in a way the average observer wouldn't expect – at least not from a massive boulder. There's always the possibility that other hot tubs have been carved entirely out of stone – indeed, it wouldn't surprise me at all, and I can only think that those who created them must be as obsessed as I am.

There's something playfully impractical about transforming boulders into common objects: Not only does it embody contrast in a wonderfully intellectual way, but it also creates value and interest. True, one might argue that a four-person spa that weighs five tons (empty!) is impractical. The irony is, this is exactly what makes these pieces interesting so long as the owners don't plan on moving them very often.

I've done the same sorts of things in making everyday objects such as tables and chairs out of stone. I've also fashioned fire rings, fireplaces, sinks, drinking fountains, signage, pathways, gateways and other items from stone.



To a large extent, everything I do is informed by my experiences in developing landscapes for clients. For many years, I specialized in creating naturalistic gardens and watershapes in a wide spectrum of residential and public settings. Although that's not my focus now as it was when I

first wrote for *WaterShapes* in 1999 (see "Classic Rock" in the April 1999 issue, page 18), that experience gave me a keen understanding of what people want in their gardens and has helped guide my work.

Back then, I found that in many cases the landscaping was actually the last thing that

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Water is as fundamental to our existence as is stone, and I find that, by combining the two, these elements provide the most dramatic and engaging of all possible contrasts. There's a joy to the way the water animates the unyielding, unmoving stone as it dances across variously textured surfaces.

was to happen in a long line of sometimes-traumatic construction processes, especially in remodeling jobs. By the time I arrived to do my work, clients tended to be fairly well burnt out, so I was always sensitive to a need to make them feel comfortable. In the years since, I've found that functional

art is a terrific way to do just that, especially if the clients appreciate the contrast and ironies and are still capable of cracking a smile at the end of a long project.

It's also helpful in the sense that the functionality of a given piece is a great way to draw people closer to an appreciation

of its artistic aspects. They might at first see a stone table and chairs as a place to sit and have a meal or a glass of wine, but because it's created as a piece of sculpture, at some point their perception will shift: They'll find a piece's deeper meaning and see its beauty on a different level.

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Water's Way

All of these functional items extend from my past life in landscaping and gardening, and the same is true of the variety of fountains I make. In fact, I look at these as *the* most functional of items. During my years in landscape design and installation, I was deeply involved in bringing water into gardens and created scores of ponds and streams of a variety of shapes, sizes and styles, all using natural stone as a key element.

If there's any medium that might rival stone for its intrinsic beauty and interest, it has to be water. Water is as literally fundamental to our world as stone is, shares indescribable aesthetic values and, surpassing stone, is essential to life as we know it. When deployed as part of a stone sculpture, water contributes its own unique beauty while providing what I consider to be the most dramatic and engaging of all possible contrasts.

The form of water, or its "shape" if you will, is as ephemeral and fleeting as a

stone's form is static. When you place those materials together, there's a fantastic paradox at play.

Moving water animates the permanently unyielding, unmoving stone. The interplay of light in water moving over a stone surface creates ever-shifting visuals, while the sound of moving water is famously alluring, atmospheric, even hypnotic. To silent stones, water lends a voice.

Water is so crucial to life that providing a water source in the garden – even if it's just a representation of water's presence in a symbolic way – lends the entire space a feeling of comfort and relaxation. It draws attention, motivates people to approach and attracts birds and other animals, lending entirely different dimensions to the artwork and the space around it.

This is all nothing new, of course. It's exactly why so many people want access to fountains, streams, ponds, pools and spas in their daily lives.

The watershapes I build these days

tend to be centered on the concept of the urn or basin. Most are upright or standing stones with bowls cut into the top. The bowls well up with water that spills over the sides and is captured at the bottom for recirculation. The heavy look of these rough-hewn pieces and the delicate flow of water sheeting over their surfaces represent true studies in contrast and subtlety.

I love the fact that these simple watershapes work across a wide range of settings. Here in the desert, where many of my pieces wind up these days, the presence of water flowing on the cusp of desolation adds yet another layer of interest and drama.

Experiential Layers

The great thing about sculpture and landscape art in general is that they mean different things to different people and can even have very different meanings for the same person depending upon how and when the experience occurs. With forms this intentionally abstract, you can

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never be sure how people will react or what they'll think, if anything at all.

I've always been intrigued by the idea that my art pieces provide a different set of experiences depending on the observer's physical proximity to them, how the pieces are situated relative to the traffic around them or by way of their function in the landscape.

In my case, I'm working largely on an intuitive level that's been influenced by years of backbreaking work with this material and the logistical, physical and practical challenges it presents. Just *moving* these things can be an enormous undertaking, but at the same time, I find the work and the gritty tasks associated with it to be endlessly inspiring.

For my part, I'm happy to let other people enjoy and find their own meanings in these pieces. So long as I can continue to work at uncovering stone's elemental and primal nature, I'll be cutting, hammering and chiseling away with a smile.

California's Black Rush

For years, I lived and worked in the northeastern United States, but about seven years ago I made the move to southern California's Coachella Valley and now operate a sculpture business on several acres of barren desert north of Palm Springs.

It was obviously a major transition, one that changed my life and my work, and the main reason I undertook it was to gain ready access to black granite. The material is exceptionally hard, polishes beautifully and is almost impossible to find in large pieces elsewhere in the country.

There's a drama and permanence I find in this material that is entirely unique. From a design standpoint, the dark color – whether polished and mirror-like or left rough and raw – looks good in a huge range of settings, from naturalistic gardens to architectural applications. And I know whatever I fashion from it will stand the test of time.

All of the work I do now involves various species of granite and basalt. Both are igneous materials borne of volcanic activity, and neither has changed since the crust of the planet formed millions of years ago. Most of the granite I use, black and otherwise, comes from quarries in California, while the basalt materials come from Washington state.

All of these are heavy and can be found as extremely large pieces that have no cracks or other imperfections – just the lumpy raw material I need to inspire me to find what I can within rough exteriors.

– R.H.



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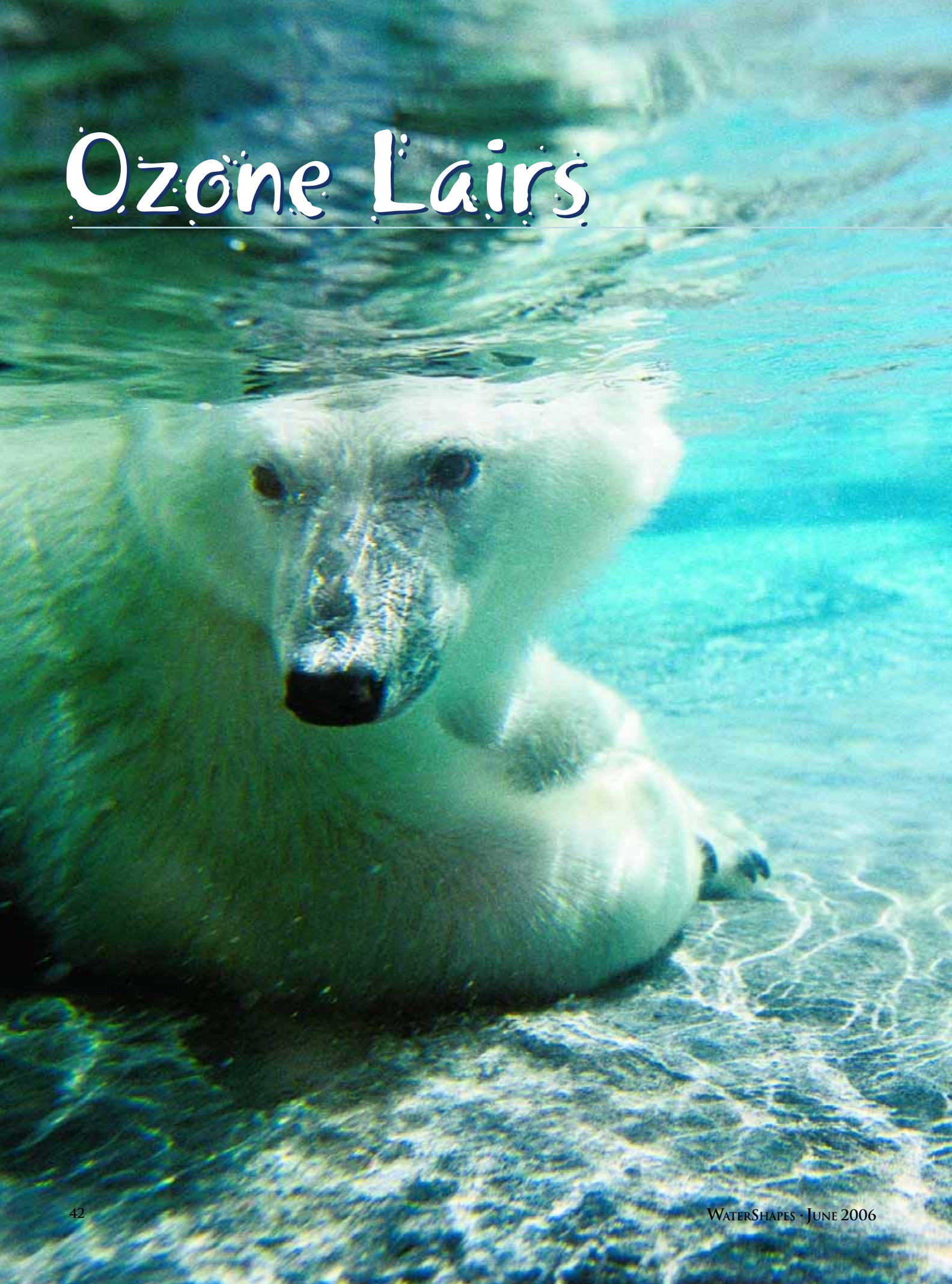
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Ozone Lairs



By Beth Hamil

I may be revealing a professional bias here, but ozone is fascinating stuff.

In nature, it's among the most essential chemicals on the planet, existing most prominently as a gaseous component of our upper atmosphere. Formed there by sunlight's reaction with atmospheric oxygen, it collectively constitutes the famous Ozone Layer that protects us from the sun's ultraviolet rays and is crucial to the very existence of life on earth.

Closer to the ground, ozone is widely used across a broad spectrum of applications. It's well known in the pool and spa market as a water sanitizer, for example, either as a chlorine alternative or an adjunct. It's also widely used in food processing and municipal drinking and wastewater treatment systems and plays key roles in the production of cosmetics and with air freshening and purification systems.

For all that, one of the most interesting applications of ozone-generating systems in the past 20 years – and the subject of this article – is the use of ozone in the life-support systems for aquatic animals held in captivity or for treatment in aquariums and zoological facilities.

Gas Menageries

Ozone is the treatment system of choice in these aquatic applications for two key reasons:

- First, ozone is so extremely reactive that it does not leave a significant residual chemical concentration behind in water to do harm to the animals. This is important for any species that spends all or part of its time submerged in water, but it's particularly important for fish that breathe in water and to water-loving mammals that don't have fur (including whales, porpoises or hippos) and are therefore more sensitive to water quality.

- Second, ozone is very good at providing crystal clear water. This may or may not mean much to the animals themselves (depending on the species), but it is of absolute importance

Used for more than 30 years to treat watershapes hosting everything from killer whales and fish to penguins and people, ozone's ability to kill harmful microbes, oxidize bodily wastes and get rid of other organic byproducts has made it the water treatment of choice for zoos, marine theme parks and aquariums as well as resorts. Here, Beth Hamil of DEL Ozone discusses what ozone does in these settings – and the technology used to deploy it.

to the *other* animals in the setting – that is, the people who pay to view these various aquatic species in accessible settings. No shark aquarium would be particularly interesting with water so murky you couldn't see their steely eyes or get a clear sense of the ease with which they move through the water.

The challenge of sanitizing and clarifying the water in marine exhibits on any scale is made immensely difficult because food for these animals is introduced directly to the water in addition to the fact that the animals in the water are far from fastidious when it comes to contaminating their surroundings with huge quantities of organic waste.

It doesn't take much insight to imagine what might happen to water quality when polar bears or killer whales or large schools of fish are present in confined spaces, nor does it take much to perceive just how difficult it can be to keep that water both safe and clear.

Building and maintaining environments to be as "close to nature" as possible is, of course, a science all to itself and falls under the general discipline of animal husbandry. As the manufacturers of ozone-generating systems used in these settings, we at DEL Ozone (San Luis Obispo, Calif.) have worked extensively with the experts in establishing these systems – a task made all the more interesting and difficult because every species we encounter presents a different "needs profile."

The upshot is that we often find ourselves caught up in

research, discussion and debate as we work with the experts in determining appropriate ozone concentrations for given species and how our systems can best be configured to meet those specific needs.

We've learned from experience that water quality is sometimes the main issue in building a given habitat, but just as likely it will be only one of many considerations. Across the board, however, we're asked to sanitize the water without releasing residuals of sanitizing and oxidizing chemicals into the habitats' water – and to do so in ways compatible with the facilities' various filtration systems.

Chemical Companions

The concern over residuals is critical. The standard sanitizing chemicals (chlorine and bromine) aren't a major concern in their elemental forms: The problem is

the byproducts that result when these two elements do their job in killing microbes and oxidizing organics.

Respectively, chlorine and bromine form chloramines and bromamines – unpleasant compounds in which the basic element combines with ammonia. These substances quickly accumulate in water and can be quite harmful to most aquatic species. And then there's the fact that the amount of chlorine or bromine required to oxidize all the dirt, fur, urine, excrement, saliva, blood, uneaten food, scales and skin would simply be *enormous*. The result would be rapid and constant creation of *massive* amounts of harmful byproducts.

To be sure, chlorine and (in certain applications) bromine work well in swimming pools and spas that are occupied only part of the time and present far lower profiles when it comes to organic loads,

but they've long since been set aside as an option in the world of zoos and aquariums. I don't know if any attempts were made to use these materials in the past, but it is likely that the results would have been extremely undesirable.

Before the application of ozone, in fact, there were relatively few large-scale aquariums inhabited by large animals or fish, because the only way to keep the exhibits healthy to that point was to replace the water on a regular basis (impractical for large bodies of water) or replace the "spent" fish on a regular basis (again, quite impractical for the likes of a large shark).

This concern over residuals is why the aquatic-display business has largely settled on ozone as the treatment of choice for its large-scale installations. And this is true despite the fact that, in natural-sea-water aquariums treated with ozone, the interaction between ozone and the sodi-

Liquid Forms

In basic chemical terms, ozone is an unstable form of oxygen that has three atoms (O_3) instead of the two carried by the oxygen we breathe (O_2). Because of this instability, ozone readily reacts with organic compounds, oxidizing them by surrendering its third oxygen atom to them. The affected compound is either destroyed or completely altered in the process, while the ozone, stripped of its third atom, simply reverts to its stable oxygen form.

These ozone reactions aren't pretty: The oxidizer literally rips microorganisms apart by attacking their carbon-based cellular structures, leaving nothing of them behind other than their elemental constituents. Ozone also oxidizes metals, converting them into oxides and rendering them insoluble in water (and therefore easily filterable). The common metals readily converted to oxides are copper, manganese, iron, zinc and arsenic.

For watershaping, ozone is particularly effective in producing water that is safe, clear and odorless. Because it's so reactive, it only stays in water for a few minutes and therefore leaves behind no chemical residual, as do other oxidizers including chlorine and bromine. In fact, after it does its work, ozone simply becomes dissolved oxygen (O_2) and thereby benefits water quality especially when that water is meant to provide life support for aquatic animals.

All ozone systems that treat water have two basic elements: the portion that generates the ozone and the management system that dissolves the ozone in the water.

The generator creates ozone in the form of a gas. Once this gaseous ozone is mixed with water it dissolves and becomes *aqueous* ozone. Whether we're talking about a small system used to treat a four-person spa or one designed to keep a killer whale's exhibit clean and clear, the basic principles of generation and mixing remain essentially the same.

In large applications (including almost all aquarium and zoological exhibits), the generating system consists of a compressor, an oxygen concentrator and an ozone generator with a high-voltage power supply and an ozone cell made using one of several available corona-discharge technologies.

Once generated, the ozone is added to the water not through mixing or bubbling (both popular misconceptions) but rather by dissolution in water. This process is called *mass transfer* and is accomplished by use of Venturi injectors that very effectively dissolve, under vacuum, more than 90% (and up to 98%) of the ozone in the water.

The colder the water, the more readily and efficiently ozone dissolves and the longer it stays in solution. This is a particular advantage in zoological exhibits and aquariums, because polar bears, killer whales, dolphins, sea lions and the majority of fish live in comparatively chilly waters. (On the other end of the spectrum, ozone is useless in water above 105 degrees F because the heat immediately breaks it down to O_2 .)

—B.H.



The challenge of keeping the water clean and clear is utterly enormous when the water is populated either by large populations of reasonably large fish or by tiny populations of truly large animals. Not only is food introduced directly to the water, but these creatures also aren't shy about doing their business both where and as nature intended.

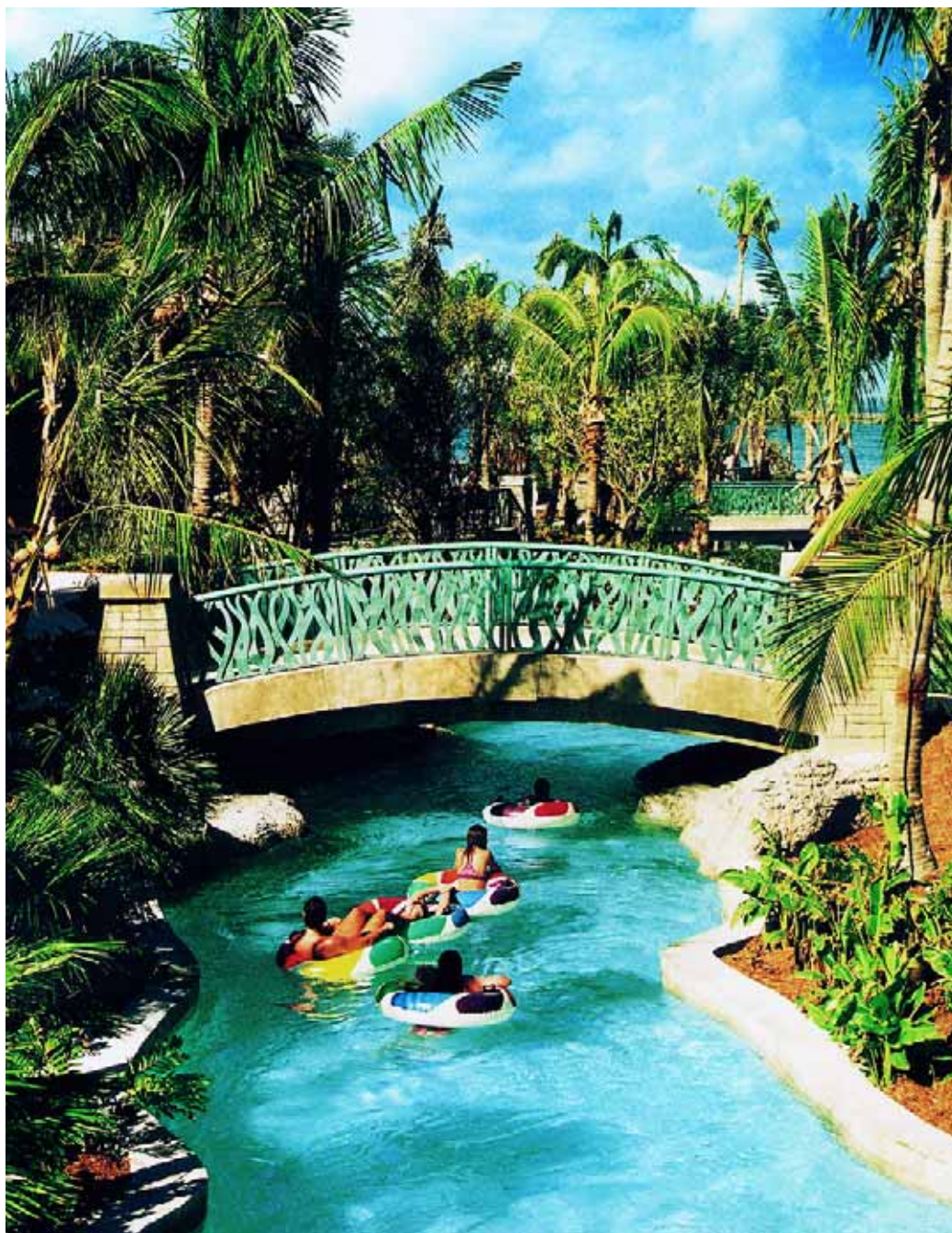
um bromide that is an essential component of seawater does create small bromine residuals: It's acceptable in these systems because (given strict regulation of applied ozone levels) the concentrations are typically small and the ozone system quickly oxidizes any resulting byproducts.

As in swimming pool applications, ozone is used in all aquariums not only as a sanitizer and oxidizer, but also as an aid in the filtration process.

In addition to the main filtration system (and in some cases, *instead of* the main filtration system), many designers of aquatic life-support systems will add an additional filtration technology of a sort known variously as a protein skimmer, foam fractionator or dissolved-air flotation system.

These devices use aeration to cause or-





ganic compounds to coagulate (or, more accurately, *flocculate*) and form a surface foam that is either discharged or gets skimmed off mechanically. Relatively small amounts of ozone are used in these applications to assist in the flocculating process.

The percentage of water to be filtered through these protein skimmers will vary along with the amount of ozone our systems will add, but those amounts are not large on a proportionate basis: Indeed,

ozone is measured in grams per hour and systems are calibrated to apply dissolved ozone at levels that seldom exceed a quarter part per million.

System Logic

In the vast majority of life-support systems we install, we add ozone using a side-stream method designed as an integral part of the system's overall flow. The amount of added ozone is monitored and controlled in all cases using

the oxidation-reduction potential (ORP) technology familiar to those who work on commercial pools and spas.

ORP electronically assesses the water's ability to oxidize compounds in a value expressed in millivolts (mV). As a rule, ORP levels for fish will be held in the 300- to 350-mV range, while for mammals that target range will be 600 to 900 mV. Further, it's generally agreed that 650 to 750 mV is equal to two parts per million of free available chlorine in



a swimming pool. (In seawater, it's interesting to note that the ORP reading is *not* reacting to the ozone, but rather to the bromine residual.)

The levels of treatment appropriate for individual species have been the subject of debate in the animal-husbandry world for many years. Even though the dose levels vary only marginally, it's almost a case where if you ask a dozen experts, you'll get almost that many answers when it comes to setting levels related to chem-

istry. To cope with that lack of clarity, we defer to the experts even when we recognize the differences between levels recommended for the same species in other projects – basically because when dealing with living organisms (micro or macro), there is a narrow margin between art and science.

In functional terms, the ozone-generating systems used in aquariums and zoological exhibits are not much different from those used with swimming pools: You

Human bathers offer their own sets of challenges when it comes to maintaining large bodies of water simply because the scale can be so grand and the standards are of necessity so strictly observed.

have a body of water that is recirculated through pipes by centrifugal pumps, generally in association with high-rate sand filters. Some systems also include either chillers or heaters, depending upon the specific needs of the animals.

As with pools, ozone for these life-support applications is always added downstream from all other components in the system (with the exception of any chemical feeders). A booster pump pulls water from the main circulation system (typically 10 to 25 percent of the overall recirculated flow) into a side-stream flow utilizing a Venturi injector that operates on pressure differential to create a vacuum that dissolves the ozone gas into the water.

Once past the injectors, the ozone-enriched water flows into a “contact tank,” where it stays for a specific period of time between (generally) two and four minutes. This pause puts the ozone in direct contact with microbes and organic compounds for the time required for oxidation and sanitization to occur. (See the sidebar below for more on contact time.)

The contact tank is equipped with a device known as a “de-gas valve” that removes any undissolved ozone and passes it to a device known as a “thermal catalytic ozone destruct” that converts unused ozone back to oxygen. Such tanks are designed with what is known as counter-current-flow technology that holds the



water inside for specified periods (determined ultimately by the system's overall volume and flow rate) without short-circuiting the flow pattern and thereby ensuring the ozone's contact time.

Now the water is returned to the system's primary flow, thus guaranteeing two things: First, there has been adequate contact time to allow the ozone to do its job; second, the water released from the contact tank and returned to the main body of water has a relatively low amount of ozone in it.

Part of the Scene

While some may question the humanitarian appropriateness of facilities such as zoos, public aquariums and marine theme parks, my own exposure to these organizations has characteristically involved working with professionals who are devoted – almost to the point of obsession – with creating comfortable, livable environments for their captive inhabitants.

In other words, this has never been for any of them a casual exercise:



Concentration and Contact

Ozone's ability to kill various microorganisms is measured according to what is known as its *CT value*, a term in which concentration (measured in parts per million) is multiplied by contact time (measured in minutes). This value is used to determine what it takes to eliminate harmful organisms common to bodies of water that contain animals, play host to human bathers or are used in treating drinking or waste water systems.

It's a simple mathematic construct: If you have one part per million of ozone in a body of water for four minutes, that's a CT val-

ue of four. (The same value applies if you have two parts per million in contact with the water for two minutes.) The elimination of various species of pathogens require different CT values, with the standard for removal in swimming pools being a three-log reduction – that is, a 99.9 percent kill rate.

In aquariums and aquatic zoological exhibits, designers of life-support systems might target specific pathogens that are harmful to a given species, thus giving them a target CT value and a means of governing the way systems are designed.

– B.H.



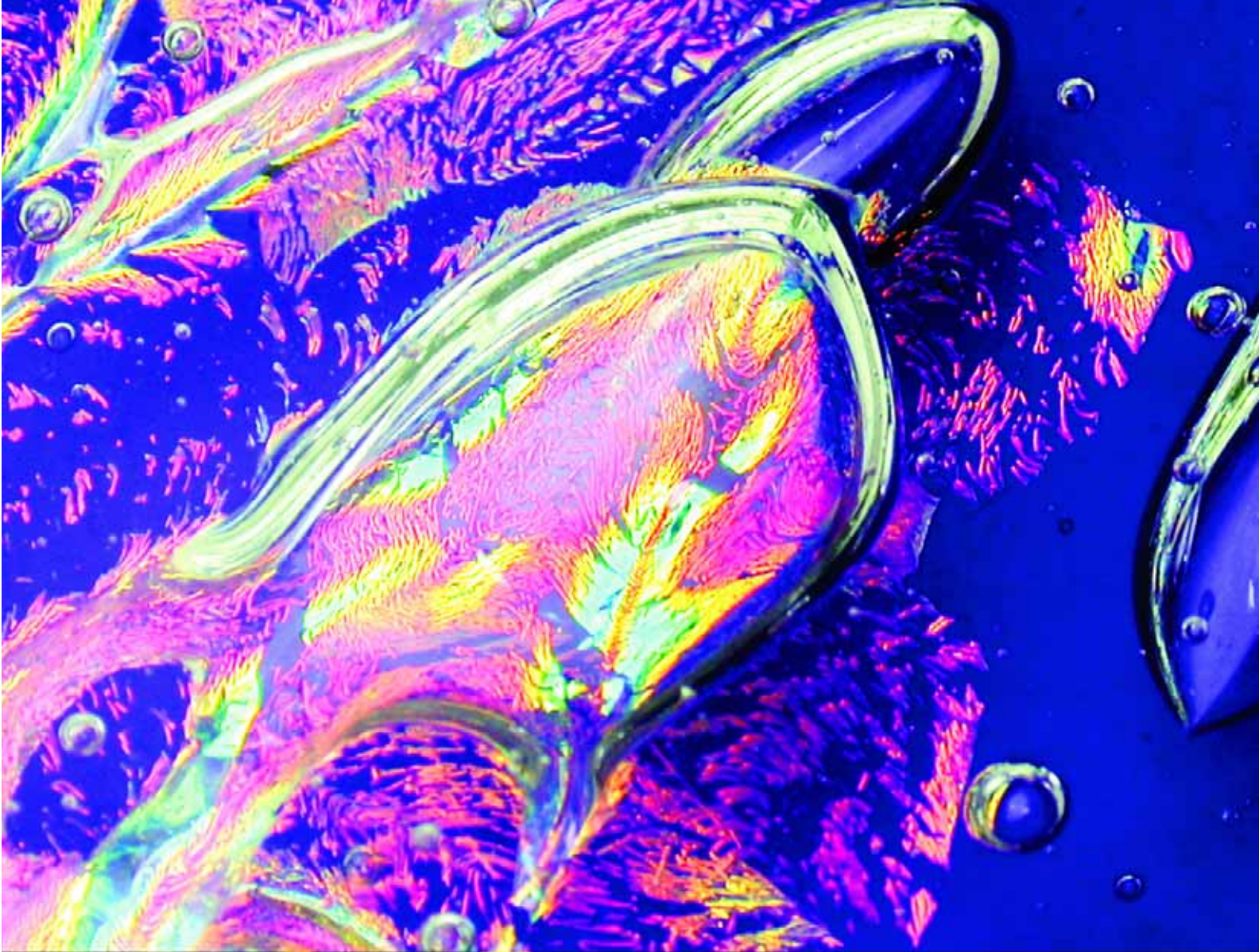
In establishing their facilities, they deal not only with personal ethics but also must comply with volumes of rules and regulations set forth by a mélange of governing bodies that set standards for animal husbandry and the care and treatment of wild animals in captivity.

For our part, we've always been proud to be involved in projects that help to save endangered animal species and expose the public to the wonders of nature, thus building awareness about issues such as habitat destruction and the needs of marine environments worldwide. We've participated in the development of facilities

that educate, entertain and in some cases serve to rehabilitate sick or injured animals for release back into the wild – soul-satisfying work of the best kind.

The fact that ozone-generation technology is so compatible with aquariums and zoological exhibits is a great boost to our own business, of course, but of greater importance and far greater professional satisfaction is the reality that this technology enables many of our planet's most fantastic creatures (and lots of less fantastic ones as well) to live their lives in comfort and safety – and often for all to see.

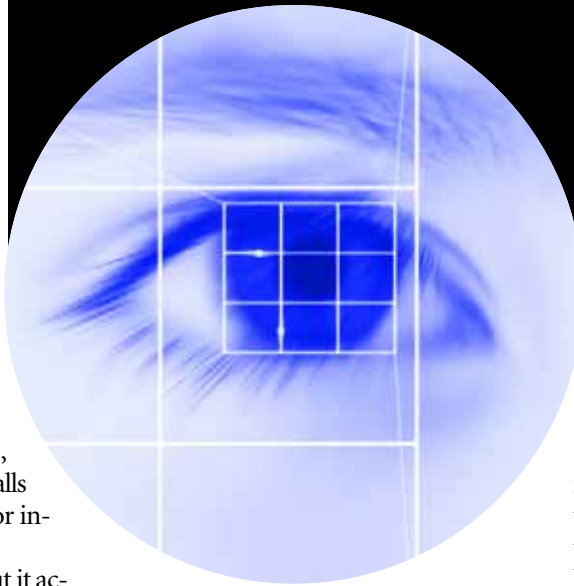
Our objectives in applying ozone technology are always twofold: first, we design environments that are friendly to the water's inhabitants, no matter the animal; second, we aim for the kind of clarity that makes observing what goes on in the water both easy on the eyes and a delight for the curious.



Light Dances

Scientist, artist, inventor and glass-tile manufacturer David Knox knows a lot about the nature of light and how it can be manipulated in the laboratory, in a factory or in a watershape. Here, he explores the subject of light's physical nature, sharing his own experience in applying optical physics to glass-tile production and defining ways in which those same principles apply to the art of shaping water in harmony with the materials that contain it.

By David Knox



When asked what an “optical physicist” does, I sometimes reply that I’m basically a professional choreographer. What I choreograph, of course, is not lithe dancers in leotards and toe shoes, but rather the countless invisible balls of energy whose source, directly or indirectly, is our sun.

That’s a colorful description, but it accurately reflects the fact that I’ve spent my entire professional career coaxing, urging, manipulating and orchestrating light in a completely conscious manner with tools both simple and complex.

Armed with a liberal arts education and majors in art history and American studies, I founded an industrial-laser company in 1983 and spent the next 18 years learning how to choreograph balls of energy into extremely precise line dances. There was nobody out there to teach us what we had to know, so we had no choice but to figure things out for ourselves. In our particular niche, we weren’t even able to see what we were working with, because the color of our light was in the near-infrared wavelengths – just outside the visual reach of the human eye.

Having worked with lasers all those years, I became intimately familiar with the fundamental properties of light. That working knowledge now fuels my work

in distinctly artistic realms, specifically in the way I apply those fundamental properties in creative ways to influence the design and aesthetics of glass tile.

At the same time, I’ve also developed a real appreciation for watershaping as its own form of choreography – an exercise in the careful management of light and shadows, colors and contrasts, solids and liquids that plays out before a client’s eyes on a daily basis.

Here, I want to discuss just one of the performers you direct as watershapers, using my own experience with glass tile as an example of how principles wielded in creatively manipulating light can be applied across the entire design process.

Ubiquitous Nature

Light is all around us, swimming and swirling, colorless, formless and without

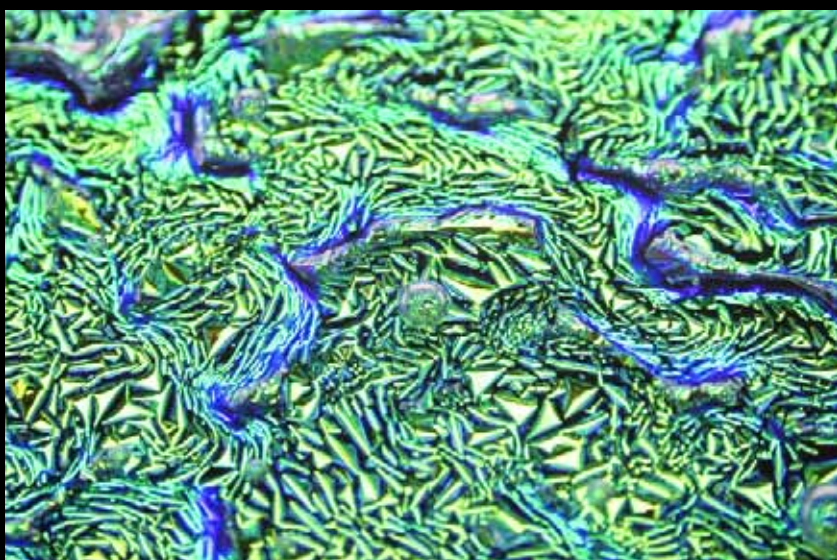
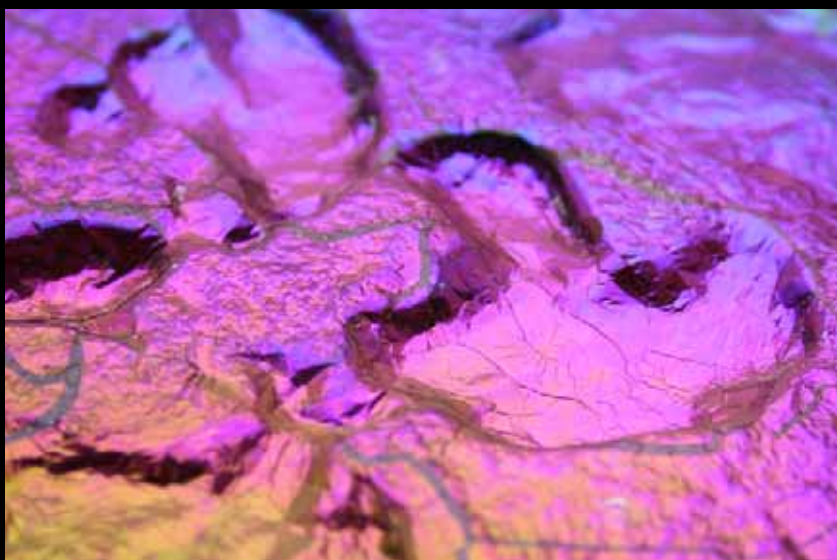
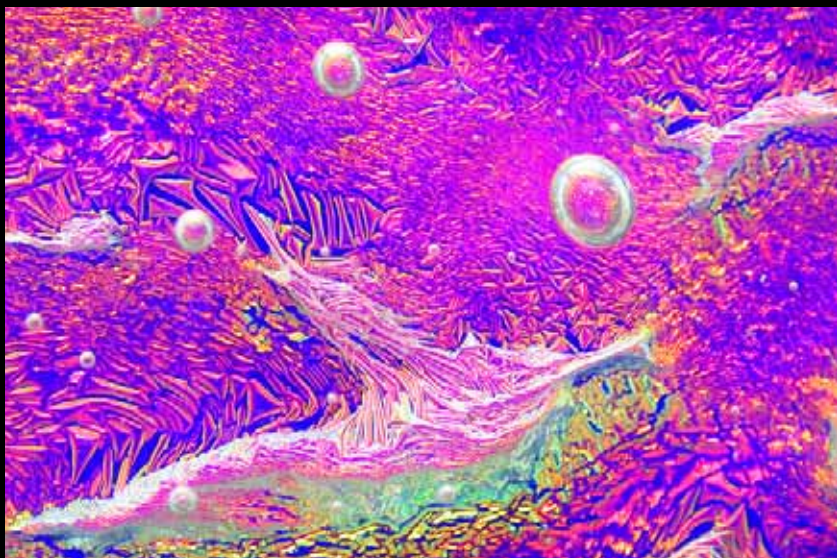
scent, taste or mass. It isn’t an element or a chemical compound, nor is it biodegradable. It doesn’t weigh anything or cost anything (unless we decide to make some on our own).

Light is free and, unlike the air, which is constantly being recycled on earth through the biosphere, there is nothing to worry about with respect to its useful life or supply or even the effects of pollution. In fact, it appears that there is no shortage of photons on Earth – and with the ozone layer becoming frail, we might actually have an unwanted glut of them on our hands before long.

It is my practical understanding of this boundless resource that led me to create the glass tiles I now produce, with optical mechanics always being the primary driver in my designs. These tiles are not just a covering for architectural surfaces: They are instead optical devices of varying complexity that I have consciously designed to manipulate incoming light.

Some are lenses, some are reflectors, some are beam splitters, some are diffusers, some are filters. Some perform well as stand-alone optical elements, others work well optically only when used in an array. Many do a lot of interesting things – and all are deliberately made with specific functions in mind.

The real challenge for me is making



these optical systems “do their thing” in a way that enables people to experience that “thing” (whatever it may be) as beauty. In this way, I am now challenged on a much deeper level than I ever was in building lasers, which don’t have to be pretty but which just the same have become devices that just about everyone needs.

But now, no one *needs* my tiles. Nor do they need swimming pools or waterfeatures, for that matter, which makes it our shared challenge to create optical/visual compositions that people desire.

While the perception of beauty is my design goal, that’s not even on my mind as I develop a tile design. My approach instead is to create an optical device in the format of a tile – a device that causes the balls of energy that enter into it and strike its surface to dance in a way that perhaps tickles the human spirit.

Form does follow function, but in my case the function is not only the apparent one of being a static object called a glass tile. While the tile must be physically robust and have some dimensional repeatability in order to be properly installed and recognized by people as “tile,” its primary function for me is as a device that actively manipulates light that happens to collide with it. In this way, the tiles are truly projectors of light imagery.

Dance Steps

The law that is the cornerstone of my work in choreographing light is this: When light hits any object in space (including gases such as air), there are only four things that can happen – it will be reflected, absorbed, scattered or transmitted. That is all that happens, and I constantly go back to this basic “truth” when I decide to create what I always see as a new and distinct optical component.

Reflections are waves of light that bounce off a surface with a given direction that has a relationship to the direction at which the light

My objective in designing and manufacturing glass tiles is to make each piece a unique optical system. In doing so, I am constantly considering the ways in which light will be reflected, absorbed, scattered and/or transmitted when it hits the tile’s surface.

hits the surface. It's just like a tennis ball hitting a backboard: Smack the wall at a severe angle, and the ball shoots off at an equally severe angle away from you. The cool thing is that we can make some pretty sophisticated, wavelength-specific optical reflectors with no more than a can of paint.

It's important to recognize that light is, in fact, colorless and takes on color only when it hits something that reflects it in a way that makes it dance a particular dance we perceive as color – what the scientists call a “measurable wavelength.” A bright, red wall appears red because it bounces back only light waves that have a crest-to-crest distance of about 635 nanometers into our eyes. In an optical sense, the paint is a mirror that selectively reflects only red; the rest of the light that hits that wall is *absorbed* by the paint chemistry and turns to heat.

Scattered light occurs when waves get bounced off a surface at random angles. Imagine smacking a tennis ball against a backboard embedded with thousands of golf balls. The tennis ball hitting such an irregular surface would bounce off randomly in almost any direction. Along those lines, a sandblasted sheet of plastic or glass will *transmit* a small amount of light but will *scatter* most of the light that hits it in countless, random directions as a result of the surface's distortions. The light that does reflect back to our eyes is soft and diffuse and sometimes fuzzy.

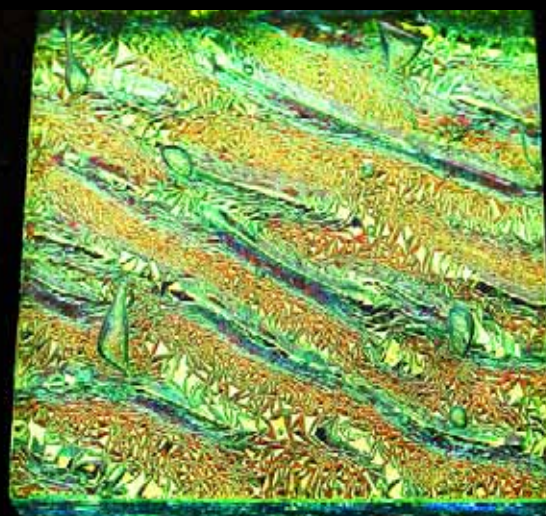
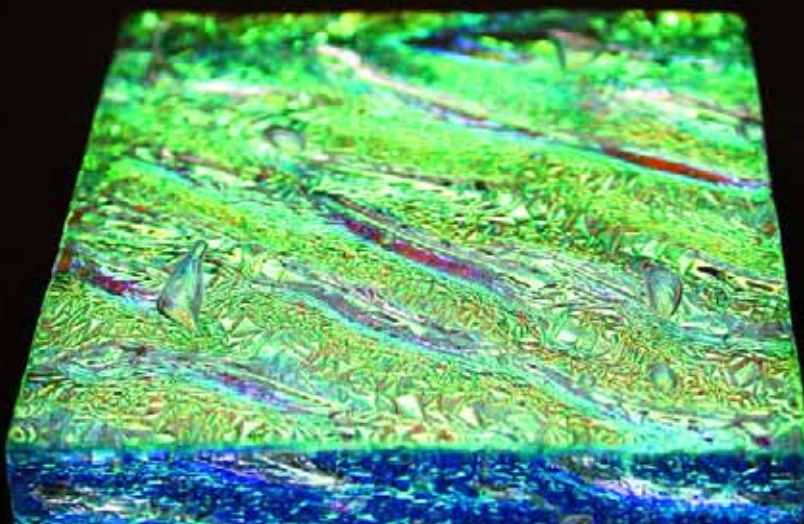
The biggest example of scattered light is the sky above us, although the way the light is scattered is mechanically different from the example given just above. But the result is the same – that is, light shooting out in all different, random directions.

Experts say that the sky is blue because molecules of gas in the atmosphere absorb blue light but let the longer waves of green, yellow and red light pass on by. The gas molecules only hold onto to the blue light for a little while, however, then spit it out randomly in all directions, with collisions occurring everywhere above us like a huge fireworks show.

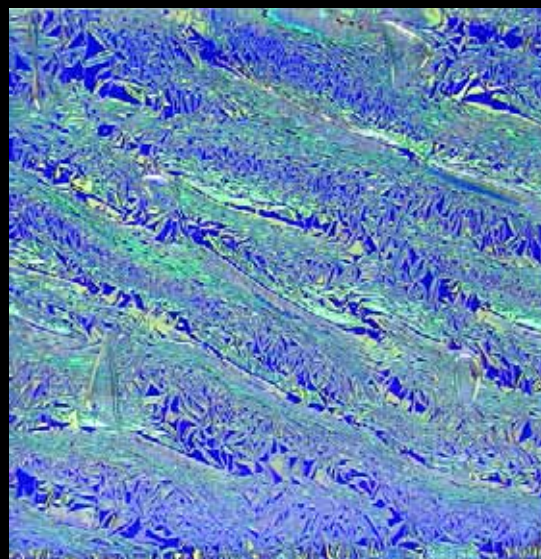
Some of this scattered blue light is reflected into our eyes and, because of the sheer volume and size of the overhead event on a sunny day (coupled with the complete absence of any green, yellow or red light), the sky appears to be quite uniformly blue.

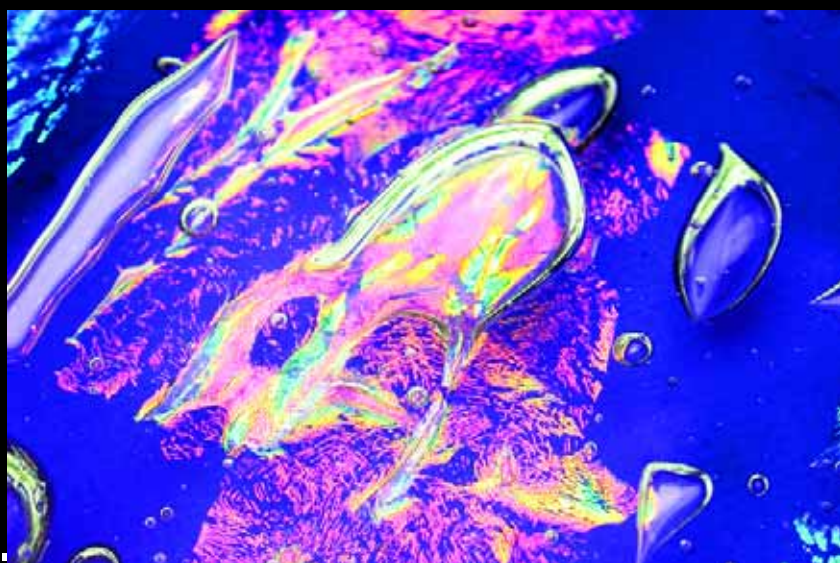
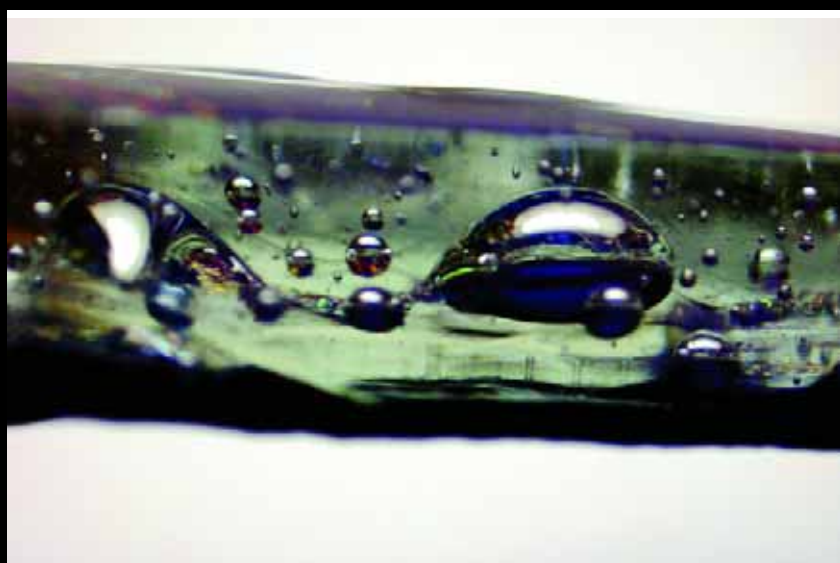
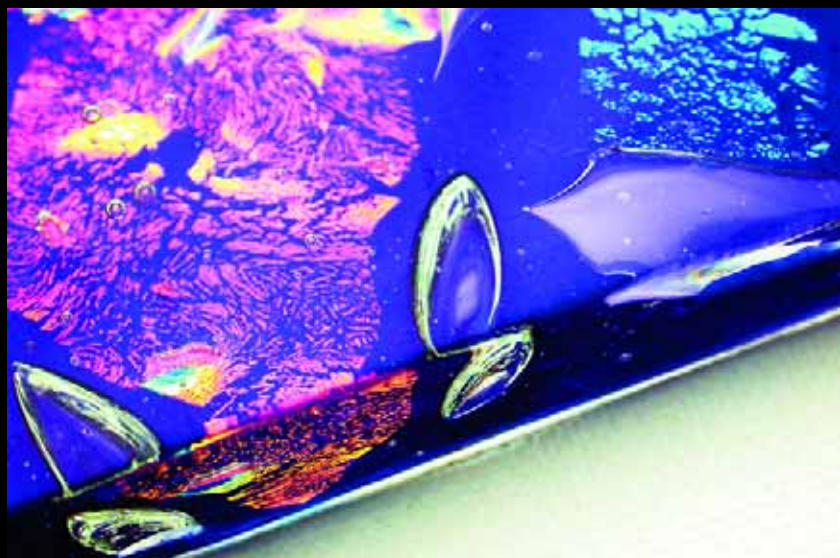
Seeing Through

Glass, like water, is transparent, which



The angle of observation is critical to the observer's appreciation of all that's going on in these tiles. In this case, a single tile is shown at multiple angles, revealing in each photograph a landscape of forms, colors and apparent textures that shifts dramatically as the eye moves along the tile's surface.





means light is able to travel through it.

As I do my design work, I consequently ask myself: What do I want the light that hits this object to do? Which colors do I want to reflect? Which ones do I want to transmit? What do I do with the colors I don't want – transmit them, absorb them or scatter them? How can I make the tile seem different during the day than it does at night? What about angular shifts? Where is the glass going to be installed, and how does the angle of incoming light affect its performance? How do I enhance, compensate or live with that?

(The last question in that series probes the photonic interaction that makes many iridescent glass tiles look very different when mounted vertically than they do when mounted horizontally. In looking at glass tiles for installation, it is therefore always a smart idea to mount samples in the place you intend them to be installed and take a look at them in different light saturations and angles. You can then plan and design specific lighting solutions that will optimize the look you want to achieve.)

As a conscious choreographer of light, I have shied away from making small-format mosaic glass designs. The "optical aperture" of a mosaic tile is quite small and is therefore too limited from the perspective of the art form I pursue. I prefer the larger apertures of bigger tiles and the fact that they enable me to play with more photons and increase the complexity of the device.

In my choreography, I find that the transparency of glass makes it a remarkably appealing medium. This is the primary reason I make very few opalescent glasses: Their opaque/translucent nature limits my ability to choreograph the dance and leaves me few tools and no real internal surfaces to work with.

Accordingly, I see the clarity and quality of the glass I make as being absolutely crit-

The deliberate and careful introduction of bubbles to the material affords me the opportunity to add dozens upon dozens of interior 'lenses' that shift and warp and reflect and magnify the internal structures of the tile.

My tiles have two distinct surfaces, and I often play with the possible contrasts between smoothness on one side and 'roughness' on the other to change the way light plays across large surfaces. With all the tiles oriented with one face up, a visual field results. With random changes in orientation, however, a special sort of luminosity is invoked.



ical to ensuring that the tile "functions" properly as an optical device. The same thing holds true for clear water: The visual system that is a watershape works better when material in the water is not disrupting the movement of light through the "lens" formed by the water.

When everything comes together, the tiles I create usually feature what are, in effect, embedded optical components that interact on different levels within the tile. Inside the tile, for example, different waves of light and color might be removed and then recombined to create shifting landscapes of imagery and



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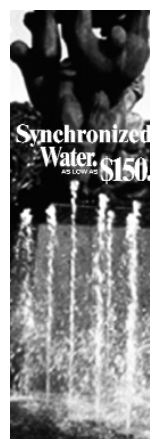
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Eye of the Beholder

Why do things we see underwater seem larger and closer than they really are? The mechanism that creates this odd perception is, in fact, the human brain!

It happens because our brains are accustomed to the way light travels in air. We perceive the size and location of objects because our brain knows that the light reflecting off the object comes back to us at a given angle, day in and day out.

In viewing an object underwater, our brain believes that the angle of the light reflecting back off that object should be coming at us at the same angle it does when out of the water. Those angles are different, however, because the speed of the light is different. The brain doesn't compensate for this – and it keeps getting fooled.

The image the brain "sees" is larger than it actually is and, if viewed at an angle, will also be offset from its real location. As a trade-off, I suppose that fish with developed eyesight would have a similar problem adjusting to viewing objects in open air.

– D.K.

eye and amplify a tile's sense of depth. If you can't see the reflections these bubbles create within the glass, there would be no point to the exercise!

In transparent glass, however, the bubbles are like little ball lenses that both diffract (spread) and refract (focus in this case) the light, resulting in an internally generated sparkle. If the bubbles are large, they act as magnifying lenses for details within the glass. I also see these large bubbles as metaphorically emphasizing the super-cooled-liquid nature of the glass and the capturing of a moment in time floating in an infinitely slow river of light. This is very similar to what happens when water is entrained with bubbles, the only difference being that in the liquid medium, the bubbles are in motion.

I work with another metaphor in casting my tiles: In running the glass through all its various stages of firing and re-firing, I purposely let gravity play a role in the outcome. Each and every

color. To achieve this multiplicity of functions requires excellent clarity within the glass: If it is hazy or dull, it simply doesn't function very well (if at all).

Internal Logic

The subtleties and complexities created

by the intricate optical design get lost if the volume of light is limited by poor optical quality in the glass material – like listening to a symphony on a tinny portable radio. I purposely seed many of my tiles with bubbles, for example, because they offer a physical frame of reference for the human

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piece is instilled with its own pattern and personality as a result of the way the glass uniquely falls under its own weight during the melt cycles. This is the spiritual aspect of my art, with the Earth's gravity playing a large and meaningful role in the result.

This participation by random forces of gravity is important to me not only because it makes each piece a unique work of art, but also because it ensures that the optical reflecting field is operating in a uniquely random fashion that evokes a particular, idiosyncratic effect.

That may seem like a small distinction, but it's actually quite profound. Just imagine a series of unique abstract paintings. While each one would appear to be different as you looked at it, each one individually would probably reflect the same image each and every time you viewed it. In the case of the abstract "paintings of light" I create in the form of a tile (or that you create in a watershape), the angle of incidence of

Island Fever

This past year, I've had the pleasure of designing glass tiles for the Anse Chastanet resort on St. Lucia in the Windward Islands – a wonderful project that has allowed me the pleasure of adding a consideration of water to my glass formula as part of the overall optical design. The large facility is just now completing a new "resort within the resort," and each of the 24 guest rooms in this building will have its own vanishing-edge pool in addition to access to a "community" pool on the top floor.

Each of these pools will be surfaced entirely in our glass tiles, which feature a sophisticated, textured iridescent surface on one side and a smooth but undulating surface on the other. The pools are to be lined with the iridescent side facing out, while the bathrooms in each suite will have the tiles mounted in the opposite way, with the smooth, undulating surface facing out.

There are 20 tile colors in all, so most of the rooms will have their own unique color schemes and personalities. The colors are quite bold but work very well in the environment, and I have to say it's been a blast making each and every one. Rather than applying a uniform iridescence to all the tiles, I spread the iridescent patterns randomly over entire *fields* of tile.

The texture is complex in reflective and prismatic qualities, and each piece is unique because of the way I designed the production tooling and manufacturing process. I deliberately optimized the glass and surface structure to operate at their fullest underwater, testing pieces as I went along by running water over them to note changes in appearance and also putting them in still baths to see static effects.

I was also concerned about the integrity of the metal-oxide coating that is folded into the surface of the glass to create the iridescent effect. To make certain all was well, I tested the coating by soaking a tile for 30 days in a bath of pure muriatic acid (31 percent hydrochloric acid). My workbench was completely ruined, but the glass was *perfect*.

– D.K.

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Seen with a glorious view in the background, the all-tile finish makes its contribution to the overall impression of luxury. From the reverse angle, however, the tile makes a much more pronounced impression, shifting in color and depth as the angle of the light changes the observer's perception of color and texture. In effect, it looks like an elaborate, shimmering Persian rug draped under the water.



the light entering the tile – coupled with the angle of vision of the viewer – will constantly and infinitely shift the image we see.

My tiles (and your watershapes) are metaphorically alive in that sense, different each and every day.

Parallel Purposes

Adding the dimension of water as another optical element into the glass-tile mix makes the visual effects to be achieved even more complex and fascinating.

Like glass, water refracts light. Every material has what is known as an index of refraction, that is, there is a known extent to which the material changes the speed at which the little photonic balls of light travel through it. The index tells us how much the material does so relative to a vacuum.

It's kind of cool when you think about it: We have the power to slow down or speed up the speed of light by putting something in its path.

To see how this works, hold an empty glass jar under water. Light breaks through the upper surface of the water and slows down. It hits the glass jar and slows down even more because the glass has a greater refractive index than the water. Then it hits the air inside the jar and speeds up to the same speed it had before it entered the water. Now it hits the other side of the jar and slows down again before exiting the jar and speeding up just a bit in moving through the water. As all these changes in the speed are occurring, the angle of the light's path shifts.

In the course of that simple passage, the light changed its speed of travel five times. And it's interesting to note that there is no loss of momentum for light: The water and the glass did not *permanently* slow it down, and the slowing that occurred was just a temporary event during the time the light was passing through the materials.

For watershapers, the parallels between what you do with water and what I do with glass extend far beyond the similar-

ities of transparency. Water, when properly shaped, framed and understood, can be consciously optimized as an optical device for light choreography. And when coupled with glass tiles, an even greater optical system may be formed. The effect is like adding another set of lenses into a telescope or camera.

Water also has a very distinct advantage over glass in a photonic sense because water moves a lot faster. It can also be stilled and very cheaply made thicker or thinner to adjust the optical density of the medium.

When you create a watershape, in other words, you are manufacturing a visual and optical system and you use light in all the same ways I do in making glass tiles. By understanding the principles of reflection, absorption, dispersion and transmission, you might be prompted to consider your design work from a different perspective, knowing that you, too, are in command of one of the grandest dances in all of science and nature.

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RESTORING WATERS PAST

The restoration of historic swimming pools is one of the most specialized of all watershaping activities, observes engineer and commercial pool designer William N. Rowley. It's work that requires patience and technical prowess in addition to sensitivity to an old pool's special needs – a process this veteran of several such projects defines through the ongoing story of the restoration of a southern California pool with a fabulous pedigree.

BY WILLIAM
N. ROWLEY

Photo courtesy Santa Monica Historical Society Museum/Bison Archives.





THE HISTORY OF MODERN

swimming pools really dates back just a hundred years or so. Yes, there are examples of pools, baths and other watershapes from the distant past, but the swimming pool as we know it is something that truly emerged during the 20th Century, mostly after World War II. Before then, there were probably no more than 50,000 pools built in all of the United States – and most of those were seen as something quite special for their time.

Nowadays, we're far enough into the development of "modern" swimming pools and other watershapes that a small number of "antique" pools have been declared historical landmarks, with those at Hearst Castle being perhaps the best examples among many. Some of these pools happen to have been built for the residences of famous people, while others were installed on commercial or institutional properties that are "historic" by virtue of having survived long enough to develop some sort of cultural and/or civic cachet within their communities.

In some cases, these venerable watershapes exemplify fine design and architecture; in others, it's more about the celebrities who swam in them. Either way, some are protected as historic sites and others will be, yet the fact of the matter is that nobody really knows just how many of these rare pre-war structures have survived into the 21st Century.

Given their short history, the idea that swimming pools might require historic restoration is relatively new and has been a factor mostly during the past couple decades – a time in which our firm, Rowley International of Palos Verdes Estates, Calif., has been fortunate enough to participate in a variety of historic restorations of swimming pools across a range of settings and types.

Some of these projects have been among the most unusual and challenging we've ever tackled, including the one I'll focus on here.

vast in scope

Unless a pool has been listed on some registry of historic places, it's difficult to define in precise terms exactly what is and isn't historic when it comes to swimming pools. It's so subjective, in fact, that what makes a pool "historic" to me is simply that some



The pool is currently covered by a huge plywood structure that was likely installed as a safety measure but has also been beneficial in forestalling additional damage to the pool's interior finish. Even here, it's possible to see that the decking, despite exposure to the seaside elements for more than 70 years, was and will again be magnificent.





Venturing beneath the plywood, we found the original tile surface to be in surprisingly good condition, considering how long it had been ignored. There is a good bit of spalling, some cracking and plenty of staining, but by and large the surfaces have withstood all tests – although the ferrous plumbing has deteriorated beyond recovery.

concerned group of people has declared it as such.

Oftentimes, these are civic groups seeking to preserve local culture and history. In other cases, there may be a particular institution or commercial property that has declared the historical value of a given facility on its own, usually for promotional purposes. The one constant for us in getting involved in these projects is that they are all different and that the work required to restore them will vary wildly.

There are always surprises, and the careful reworking of these structures offers a fascinating view of the way pools were built in years gone by.

For the most part, restoration work flows in distinct phases, often beginning with some sort of detailed feasibility study that is followed by design and bidding phases and, finally, the construction process. In some cases, these phases can take several years, because every step is carefully scrutinized by local historians and architectural historians as well as architects and designers who typically are drawn from top firms well-attuned to the special needs of historic buildings. These people tend to see restoration as an art form all its own.

The processes stretch over a course of years for two primary reasons: First, every step to be taken on a historic site must be proposed, considered in painstaking detail and ultimately approved. This can get incredibly convoluted, because in many cases, measures that are appropriate from the restoration standpoint run diametrically counter to modern building and health department codes. What this means is that many project elements will be the products of spirited negotiations as ways are found to bend or create exceptions to closely followed rules.

How spirited can it get? Suffice it to say that we've



learned through the years just how serious a business historic preservation can be.

The people who become involved in these projects tend to be committed, passionate, scholarly people who consider every reconstructive measure from a variety of perspectives. In many cases, we'll be asked to provide alternative solutions to what we'd consider to be conventional upgrades, a quest that engages us quite often in side projects akin to reinventing the wheel – not to mention extensive research among old papers and photographs mixed with doses of educated guesswork.

And everything we do tends to be complicated by the huge fact that in almost all cases, the work must be planned without the benefit of original construction documents.

top-notch talent

We've also learned that the professionals who get involved with this work, from the architects to the most peripheral of the subcontractors, tend to be of absolutely the highest caliber. Most do not have to do this work from a business standpoint; instead, they do it because it's professionally gratifying.

They do it because the process, although at times frustratingly attenuated, is also often quite exciting, and in many cases those who participate are personally vested in seeing these important community facilities brought back to a state approximating their original splendor. Yes, there is prestige that comes with historic renovations, but ultimately it's hard work.

The second reason these projects have such extended time frames is that funding is almost always a major challenge. It's not unusual for the work on these projects to come with hefty price tags – perhaps several times the cost of similar work on non-historic facilities. Organizing the support of investors, financiers, philanthropists, contributors and benefactors of all varieties is a simultaneous undertaking that must succeed for the work to move forward.

In other words, work on historic restoration requires patience on all fronts: You have to be prepared for the unexpected at almost every turn, and there are always situations in which you have to come up with inventive solutions to technical problems or just sit around and wait

High in the Colorado Rockies sits the former mining town of Ouray. It is now primarily known as a ski resort set amid jaw-dropping mountain scenery, but one of the town's unique attractions is a massive hot-spring-fed spa facility originally built in the 1930s.

It's an imposing body of water: 250 feet long, 150-feet wide and shaped like a football, it holds a million gallons of water and was built by miners. Resourceful folks, they reinforced the hand-mixed, poured-in-place concrete shell with steel railroad tracks scavenged from the Denver & Rio Grande narrow-gauge railway system, which at one time had its northern terminus at Ouray.

The operation of the facility as originally built was truly primitive. In a routine made necessary by recurring algae blooms, the vessel would be drained each Tuesday, at which time it was pressure-washed before being refilled with water from four nearby hot springs. There was a little building on site that housed a witch's brew of plumbing, valves and all sorts of nonsensical mechanisms – enough gear that it somehow kept running for nearly three-quarters of a century.

The four water sources include Ball Park Springs, an artesian aquifer that provides the facility with 40 gallons of water per minute at 100 degrees; city water from the Uncompahgre River; OX2 Springs, which provides 270 gpm at a temperature of 120 degrees; and Box Canyon Springs, a source that emerges as a beautiful waterfall southwest of the town and provides 157 gpm at 145 degrees.

Our project was prompted by a desire among state and local officials to avoid dumping excessively hot water into the Uncompahgre River (the name given to it by the Ute Indians and meaning "the last place on the mountain where the snow melts"). This intrusion was found to be harmful to local wildlife, so we redirected the discharge from the facility – now just a fraction of the previous level – into a nearby hydroponics sewage system, the highest of its kind in the world.

The pool is divided into three sections, with a spa held at 102 to 104 degrees F that flows into a warm pool held at 97 to 100 degrees. This in turn flows to a swimming pool that varies in temperature between 78 and 85 degrees.

This project stands in stark contrast to the refinement of the historic restoration described in the accompanying main text: Yes, this is a historic property, but in this case, our work was *far* from delicate or subtle. We did little to the facility aesthetically speaking, but we sawed, bored and basically fought our way through the massive structure to run thousands upon thousands of feet of new plumbing while adding scores of inlets, drains and fittings.

We cut away huge sections of the shell (which measured more than three feet thick in some places) to accommodate plumbing runs and built a new equipment room with modern pumps and filters. It was a rugged, Wild West brand of historic restoration for a town with a uniquely rugged history.

– W.N.R.

for some connected portion of the work to take place. And every single procedure must be fully documented, both for reference by those who may be called in to work on the facility in the future and to authenticate that restoring the site has not compromised its historical value.

In many cases, historic pools are located inside or adjacent to historic buildings, meaning the footprint of construction activity must be kept to minimum. There are also times when, to allow for restoration of a pool, entire portions of the sur-

rounding buildings must be disassembled piece by piece and then painstakingly reconstructed after the watershape restoration has been completed. Either way, there is no such thing as a quick turnaround.

This is the sort of work for which very few firms are qualified, largely because they must be able to accommodate the lengthiness of the processes logistically and, often, financially. That, and the fact that these jobs don't come around too often, is why nobody I know sees this as the main focus of his or her work. In our case,



The fact that the ladders – an original detail borrowed directly from the design for the pools at Hearst Castle – are in somewhat reasonable shape *below* the waterline is small consolation for their complete disappearance up on the deck. Restoration in these cases will not be possible: We'll be calling in a sculptor to fabricate replicas.

we might go years between historic projects and, when we get them, might end up being sidelined for years in the pauses between the study, design and construction phases.

It's never easy, but it's always fascinating and gratifying.

a hearst hideaway

To illustrate the above in real-world terms, let me relate the story of an ongoing project. Still in pre-construction phases at this writing, the job already encompasses the essence of historic rehabilitation on all the levels described so far in this text.

At the outset, I mentioned the Hearst

Castle pools as being perhaps the best known of all historic swimming pools. They are indeed among the most visited and photographed of all pools ever built, and their beauty has more than withstood the many tests of time.

Even those who might be devoted fans of Hearst Castle are probably unaware of the fact that it is not the only such place the fabled architect Julia Morgan built for William Randolph Hearst. Indeed, not long after the castle overlooking the Pacific Ocean at San Simeon was completed, Hearst retained Morgan to design and oversee the construction of a (relatively) smaller residence located on the beach

in Santa Monica, Calif.

It's not nearly as grand as the castle, but it matched it when it came to luxury, opulence and the expression of raw wealth and power. The property sits right against the broad sand beach on the shores of Santa Monica Bay right near the fabled "Muscle Beach" area – a legendary surf spot that is credited among other things as being the birthplace of beach volleyball. A broad concrete strand runs by the western boundary of the property, which for years has been less than attractive to the tens of thousands of people who use the strand for riding, jogging, walking or skating.

Hearst commissioned the home for his



Perhaps the most exciting discovery inside the pool was the relatively good condition of the tile border that spans the full perimeter of the pool's bottom. These representatives of the glory years of California tile-making are worthy of display in a museum all on their own.

long-time companion, the actress Marion Davies, as an only slightly less ostentatious reflection of the motifs Hearst and Morgan applied at San Simeon. The estate was built over several years during the 1920s, and the original property included a 100-room home, tennis courts, guest quarters and a beautifully ornamented swimming pool featuring tile, marble decking and statuary that mimicked the Greco-Roman styling of the Neptune pool at the castle.

Hearst reportedly spent \$7 million on the original construction – an astronomical price tag for the times.

The estate underwent radical changes through the years, including the demolition of the original house and the addition of several buildings, some of which served as an exclusive hotel for several years in the 1940s and '50s. The site was sold in 1959 to the State of California, which leased part of it for use as a private club and opened much of the beach to the public.

The site experienced severe damage in the 1994 Northridge earthquake. Soon thereafter, it attracted the attention of a range of prominent citizens and city officials who proposed returning what remained of the the property and its pool to their original glory. At this point, approximately \$24 million – more than triple the original construction cost – has been set aside for the estate's restoration.

rising tides

City Architect Lauren Friedman contacted us in February 1998 to take part in a feasibility study for restoring the site, with our portion covering the renovation and appropriate rehabilitation of the swimming pool. Since then, we've been intimately involved in every single step of this process.

The rectangular vessel is a massive, poured-in-place concrete structure that was originally finished with wildly ornate tile and surrounded by marble decks laid out in a stunning geometric pattern. It also featured the exact same marble handrails that are among the most appealing of all the details of the pools at Hearst Castle.

It is, in short, among the most beautiful of all swimming pools built during that or any other era, but today it is in sad shape, sitting empty and hidden beneath a plywood cover that was put up for safe-

The U.S. Military Academy at West Point boasts several beautiful indoor pools. While none of them is historic *per se*, the Arvin Gymnasium that houses them certainly is.

The old facility was named after the first West Point graduate to die in Vietnam. In this case, we rehabilitated three pools inside the facility, upgrading their systems and reworking various finishes and ancillary elements while making sure that nothing we did made any sort of visual dents in the gymnasium itself. (For two of the pools, in fact, our firm has overseen renovations twice during the past 20 years.)

Without rolling through the details at length, this form of historic-renovation work is about taking down parts of the historic building, labeling and cataloging every single scrap of material before beginning to renovate the pools with all that the process entails.

Once the pool or pools are in order, the project involves reconstructing the building and returning it to its original state – not an easy task by any means. Where some projects are all about historic sensibility and nuance, projects like these where the pool is an open book but the *building* is the source of historic concern are largely about being careful and systematic.

The scope of the work encompassed upgrading the Crandall Pool, a 50-meter competition pool with a 10-meter diving tower; a 25-meter intramural pool; and another vessel for general use and military training. The Crandall pool was built originally as a six-lane pool, so remodeling the vessel to include eight lanes required the widening of a portion of the building. It has a unique movable bulkhead that retracts into the floor of the pool; we'd been called in to rework and repair that system.

Because of the age of the building, there was a huge challenge with asbestos abatement. This meant we had to coordinate our activities carefully with the Army Corps of Engineers.

In the accompanying text, I mentioned that in many cases the people who work on these projects have some sort of vested personal interest. In this case, as a retired two-star U.S. Air Force General, I was intensely interested in the history of this facility and its use, and I was highly motivated to provide the cadets at West Point with a top-notch place to swim, compete and train. This project stands as a point of distinct professional, personal and even patriotic pride.

–W.N.R.

ty concerns and to protect the vessel from further deterioration.

The equipment set is long gone, and the original ferrous plumbing has long since decayed beyond utility. The handrails were removed long ago, but happily, much of the tile and decking are still there and in surprisingly good condition.

Our initial work involved pumping the mud, slime and debris out of the pool and examining just about every square inch of its interior and the surrounding areas. We conducted soils tests, core-drilled samples of the shell (which turned out to be surprisingly sound) and basically took measurements of every conceivable elevation, dimension and contour.

The pool is 103 feet, five inches long by 22 feet, one inch wide. We've deter-

mined that those odd dimensions were dictated exclusively by the dimensions of the tile: The shell, it seems, had been sized to accommodate the tile without necessitating any cuts!

We also encountered the remains of an entirely separate vessel – apparently a large wading pool – in the ground beneath the nearby parking lot. It will not be restored and is little more than a curiosity at this point, faded from memory and encased in asphalt.

forward motion

Armed with this odd trove of information, we developed a plan for the restoration in association with the project's lead architect, Fred Fisher & Partners of Los Angeles, and a host of experts in-

volved in the project on a variety of levels. The contractor is Pasadena, Calif.-based Pankow Special Projects – another key player on the design team. The scope of work as we defined it includes:

- ▮ Removal, labeling and cataloging of the decking material to facilitate trenching around the pool shell for installation of new plumbing and the subsequent (and exact) reinstallation of the deck

- ▮ Replacement, repair and sprucing up of the pool's interior tile surface

- ▮ Possible replacement of the handrails (an effort that will require contacting with an Italian sculpture studio or marble artist of some kind)

- ▮ Installation of a new equipment set that meets health-code standards for water treatment and turnover rates.

This list simplifies things somewhat, but to a large extent the specific measures here are not all that far removed from a typical renovation project for a big commercial pool.

What will set this project apart is the attention to historic detail and the ways we'll reconcile the need to update the system on the one hand while on the other holding things as close as possible to their original appearances. As is typical of these projects, there are no original plans, which means all we have to guide us is old photographs and the advice of architectural historians.

One of the largest challenges we face is that this was originally designed as a residential pool without any thought being given to health and safety codes. This means that we have to make some changes to the pool and its systems to bring them up to code, but it also means we'll have to seek variances, some of them significant, in order to preserve the vessel's historic nature.

For one thing, the pool is finished in richly colored tile. In most places, of course, public swimming pools must be white and white only. In this case, resolution is pretty straightforward in that the health department has no real choice but to roll with this major variance. But even with an issue as apparently simple as this, the process of arriving at a point of permission and securing all the proper blessings is anything but simple or linear.

For another, the pool is three feet, ten inches deep when, according to com-

Photo courtesy Santa Monica Historical Society Museum/Bison Archives.



With its grand staircase, the building that once stood alongside the pool is long gone and beyond restoration, but the pool itself will again reflect the beautiful design sensibility of architect Julia Morgan, right down to the elegant handrails and the shimmering surface of the tile-framed water.

mercial pool-safety standards set forth in California Code of Regulations, Title 24, Chapter 31B, Public Swimming Pools, no pool's shallow end can be more than three feet, six inches deep. Again, this is a case in which aligning the pool with modern standards would basically involve ripping up the pool and rebuilding it – an intrusive measure that would be historically unacceptable.

Beyond that, we can easily comply with current codes in a number of ways, including the installation of dual main drains (to avoid the risk of suction entrapment) and the revamping of the circulation, filtration and chemical treatment systems and plumbing to meet standards for water quality and turnover rates. We'll also be adding deck drains. In all these cases, the visual alterations from the original are relatively minor, acceptable to historians and a crucial nod to the health and safety inspectors.

the past regained

We're currently in the design process and working with the contractor and var-

ious state, county and city authorities in addition to the Annenberg Foundation, the project's primary donor. As it now stands, the physical work will begin sometime in 2007, nearly ten years after we first caught wind of the existence of this place.

Even given our long involvement in the process, I'm still amazed by the idea that in the not-too-distant future, we're going to be able to see and appreciate another example of William Randolph Hearst's mind-blowing collaboration with Julia Morgan, arguably the most significant of all of history's female architects. It's as if we're raising buried treasure, lost long ago and nearly forgotten.

Of course, this work has an elephantine gestation period and can be remarkably time-consuming and at times frustrating, but just the opportunity to work with so many talented people on a project of such real value to the community and the state's history carries a value that cannot be measured in compensation, professional pride or community acclaim.

It's one of those rare things in life where the journey is truly its own reward.

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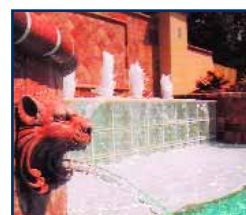
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ter cycles. **Advanced Aquaculture**, Brandon, FL.

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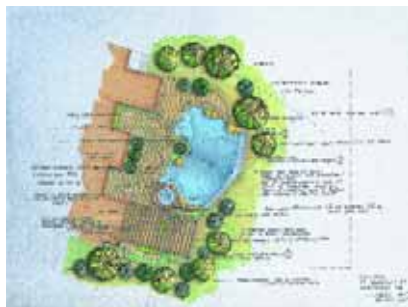
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Professional Drawing & Presentation School September 25-29, 2006 Scottsdale, Arizona

Genesis 3 co-founder and principal instructor David Tisherman will lead an intensive, week long, professional-level course designed to show participants what it really takes to develop top-flight drawing and presentation skills.

Open to a limited number of applicants, the school will cover rendered flat plans in multiple presentation formats, markers, vegetation, surface materials, water effects, elevations, color perspective rendering and much more.

Developed at the request of pool professionals, landscape architects and graduates of Genesis 3's Level I and Level II schools, this dynamic program is based on professional-level drawing courses that David Tisherman taught at UCLA for 12 years.

Program cost (including accommodations, meals and all drawing materials and media): \$6,300.



Pool & Watershape Construction School September 28-30, 2006 Scottsdale, Arizona

In keeping with our mission of advancing education on a global level, we are pleased to offer yet another of our Genesis 3 Pool & Watershape Construction Schools as the latest component in our design-certification program.

The school's curriculum covers plan review, excavation, layout, soil and drainage, steel placement, plumbing, utilities, gunite, tile and coping, decks and drainage, remote controls, automation, plaster and start-up – with top-flight tradespeople, designers and engineers from the industry as instructors.

The school will be held at the Hyatt Regency Scottsdale Resort & Spa at Gainey Ranch.

Program cost (including accommodations for three nights, meals and course materials): \$2,250.



AQUA Show/Genesis 3 Design Studio November 6-10, 2006 Las Vegas, Nevada

Since 2004, Genesis 3 has participated in a trailblazing alliance with organizers of the AQUA Show, held annually in Las Vegas. For 2006, we once again will offer our accredited design programs (Elements of Design; Design Communication for Measured Perspective; Color Theory & Design Application; The Vocabulary of Style: A History of Architecture, Art & Water; Creating Digital Presentations; and Understanding & Designing Fountains & Waterfeatures) in conjunction with the show.

In addition, seminars and presentations will be offered by top instructors on topics ranging from hydraulics, pond construction and vanishing-edge design to garden styles, landscape design and exterior lighting.

New programs this year include Water in Architecture with Helena Arahuete; Interactive Plant Design with Stephanie Rose; and WaterGarden Design with David Duensing.

For additional program information and registration forms, please visit our web site.

Founded by: David Tisherman, Skip Phillips and Brian Van Bower

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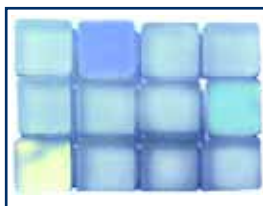
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GLASS MOSAIC TILE

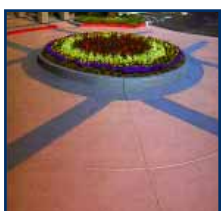
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BOYCE & BEAN offers the Beach Glass Mosaic line of tiles. The 1/2-inch-thick product has an opaque, sea-green color and comes in an array of shapes and sizes and is designed for use inside or out on walls, floors or counters and in pools and spas. The field tiles come in four standard sizes, and custom sizes up to 12 by 12 inches may be ordered. Liners and medallions are also available. **Boyce & Bean**, Oceanside, CA.

CONCRETE STAINS

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BRICKFORM offers the Freestyle line of solid-color concrete stains. The breathable, completely opaque material reacts with itself, not the concrete, so the coloring doesn't alter the concrete's texture. It's also completely changeable: If a new color is desired, just stain over the existing coat – without stripping – as many times as is desired with any of the line's 40 available colors. **Brickform**, Rancho Cucamonga, CA.

LIMESTONE PRODUCTS

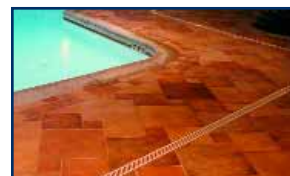
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COLD SPRING GRANITE now offers Kasota Valley Limestone. Quarried in Minnesota's premier dolomite limestone region, the rich, warm golden-cream-colored stone is known for strength and beauty and, as a dolomite, has lower moisture absorption and is less porous than the common oolitic limestone. It is also abrasion-resistant, making it suitable for many applications. **Cold Spring Granite**, Cold Spring, MN.

DECK DRAIN SYSTEMS

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QUAKER PLASTIC CORP. has added to its Water Hog line of deck drains. In addition to its 3-inch series, there is now a 4-inch series as well as a new radius-drain option in the 3-inch series – and all products are now available in tan, gray or white to match a wider variety of decking treatments. Made with all-weather PVC, the systems are designed to handle more water without clogging. **Quaker Plastic Corp.**, Mountville, PA.

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WATER SHAPES

CONTROL SYSTEM

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PENTAIR WATER POOL & SPA has developed a version of its EasyTouch control system that simplifies integration with the IntelliChlor automatic salt chlorine generator with a direct connection that eliminates the need for a separate power center for the water-treatment system. The eight-function controller has an indoor control panel as well as wireless and spa-side remotes. **Pentair Water Pool & Spa**, Sanford, NC.

MULTI-STREAM FOUNTAIN

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ROMAN FOUNTAINS has introduced Lightning Bug, a flush-to-deck, multi-stream nozzle for pool and dry-deck watershaping applications. The linear nozzle array features all-brass construction, adjustable nozzle angles and ranges, ADA-compliant slotted grates with security fasteners and an opposing-inlet design for even flow distribution. An LED lighting option is available. **Roman Fountains**, Albuquerque, NM.



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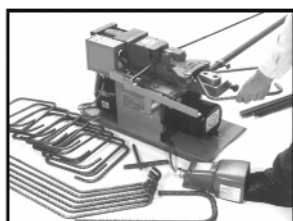
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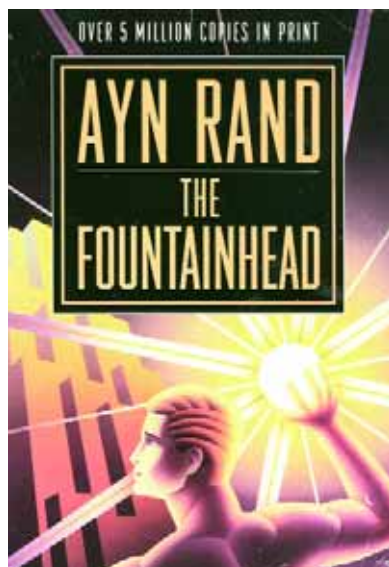
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By Mike Farley

A Novel Approach



Every once in a while, I find it useful to read something purely for inspiration. Especially as the busy season heats up, I truly enjoy the thought of stepping away from the grind and getting lost in the pages of a good book.

Most recently, I picked up Ayn Rand's classic, *The Fountainhead* (Penguin Books, 1994), and found

not only a terrifically entertaining story, but one that I also see as useful on the professional front because of its many insights into issues of creativity, design and personal integrity.

Let me start by saying that I'm not offering this unusual entry as an endorsement of Rand's controversial philosophy. There are plenty of ideas presented in this long, 700-plus-page book that don't align with the way I see things, and I have no intention here of commenting on Rand's "objectivism" in any way. To me, the core of the story is so germane to what watershaping is all about that it's easy to glean useful ideas and pretty much let the rest roll by.

Indeed, the story Rand weaves is one that cuts to the heart of what we've seen happening in the watershaping industry during the past several years. It's about rogue architect Howard Roark, a man categorically devoted to doing things "his way."

In this, Roark seems a thinly veiled incarnation of Frank Lloyd Wright, and the parallels are obvious: Roark is unsatisfied with the status quo and seeks to create buildings that are beautiful and functional. Along the way, he clashes fiercely with an architectural establishment that is hell-bent on traditional approaches to design.

Another architect, Peter Keating, serves as Roark's foil: He's steeped in tradition and is far more favored than is Roark, at least at first. I won't trace the plot, but suffice it to say that Roark's star rises and Keating becomes an imitator who comes to envy Roark's creativity and eventual success. It's a compelling story, even though it's a bit too ponderous at times.

Throughout the book, I found all sorts of resonance with watershaping and modern architecture and real-life figures whose work has become influential. Nowadays, in fact, design creativity has become a driving force in our business, with individuals including my fellow *WaterShapes* columnists David Tisherman and Brian Van Bower doing all they can to break new ground and retool the way the industry looks at design. Roark's story also brought to mind the career of Robert Mondavi, the winemaker whose single-mindedness Brian has saluted in his column on more than one occasion.

Some works stand the test of time, and this is one of them. It's amazing to me that a novel Rand first published in 1943 is able to resonate so clearly more than 60 years later in ways that seem both modern and groundbreaking.



In the April issue, I covered three books by author Tom Peters on cultural trends and business philosophy and have discovered there was also a fourth in the series. That book, *Tom Peters Essentials: Design* (DK Publishing, 2005), is all about the importance of design creativity and argues effectively, I believe,

that it is at the heart of forging an emotional bond between consumers and any sort of product, from razors to watershapes.

As he writes, "Uniqueness equals emotional connection." That's advice we watershapers can literally and figuratively carry to the bank. [MS](#)

Mike Farley is a landscape architect with more than 20 years of experience and is currently a designer/project manager for Gohlke Pools in Denton, Texas. A graduate of Genesis 3's Level I Design School, he holds a degree in landscape architecture from Texas Tech University and has worked as a watershaper in both California and Texas.

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