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Natural Inspirations

By Eric Herman

Through the years, a number of key themes have almost effortlessly woven their ways into columns and features published in *WaterShapes*. Some of these include the value of design education, the significance of familiarity with art history, the importance of materials selections and the virtues of sound hydraulic design, to name just a few.

Another theme that stands among the most common of all our overarching concepts has to do with how nature can be used as a source of creative inspiration and for direct design guidance. Quite by coincidence, this particular theme is prominent in this issue in three distinct and very different contexts.

First up is Brian Van Bower's "Aqua Culture," beginning on page 12. Here, he discusses a recent trip to Hawaii and how studying the waterfalls of Maui and Kauai offered him models he intends to use as a custom watershape designer. What I find fascinating is that Brian identifies insights about nature as being applicable not only in projects where the idea is to imitate nature, but also in architectural designs where he can translate lessons learned about scale, sounds and sensations of discovery found in nature into key details within distinctly man-made environments.

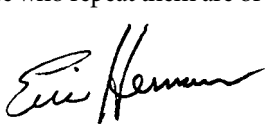
Next comes Rick Driemeyer's "Safe Havens" (beginning on page 28), in which he takes Brian's observation of nature in a completely different direction while describing projects in which he deliberately creates habitats for use by various creatures including frogs, turtles, birds, insects and, of course, fish. By applying extensive, painstaking observation of natural water, plants and rock formations to his work, he manages to create spaces animals will approach and be happy to occupy.

Finally comes "Malleable Permanence" (see page 36), in which Matt and Paul Doolin of Topanga Art Tile & Design discuss how their childhood experiences in nature – particularly a diving trip to Australia's Great Barrier Reef – have inspired their work ever since in creating vivid ceramic-tile representations of underwater scenery, botanical forms and various organic patterns. All, they say, has been directly inspired by time they've spent out and about in nature.

These discussions come at observation of nature from widely different perspectives and will actually lead you in quite different directions, if you're so inclined. But taken together, I see them all as making a case that, *whatever* your chosen path beneath the watershaping umbrella, there are some concepts that transcend distinctions among professional activities – the fully engaged appreciation of nature being one of them.

Another facet of this common ground worth mentioning is that, in all three cases, these professionals express how useful it is to spend time studying the ways Mother Nature does things while also expressing, in highly personal terms, just how fun and fascinating it can be.

As suggested above, such testimonials are nothing new to these pages and will certainly be part of other columns and features in the future. My basic point is that some ideas are worthy of repetition, and those who repeat them are offering advice that's well worth taking!



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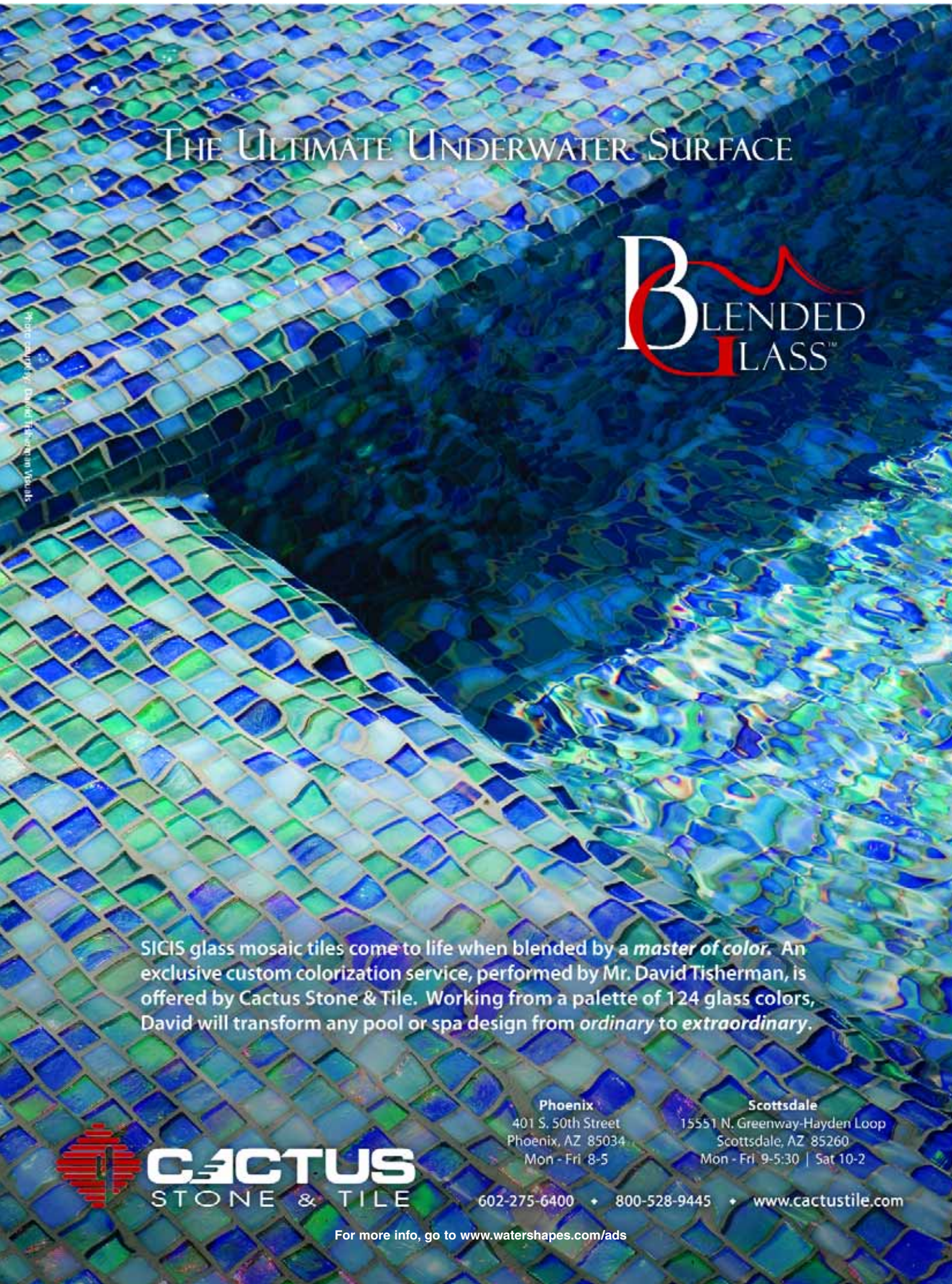
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Letters

Quality and Pool Plaster

Dear Editor: In the realm of design, bidding and contracting, it's expected for a designer or a bid solicitor to specify certain project elements, from time constraints or approved materials to contractor qualifications or workmanship practices. Specifications are a method of ensuring that a final project will fit the concept of the designer and the needs of the client.

Conversely, it is common to leave *un*specified those portions of a project covered either by existing standards or instances in which *common* practice is recognized as *optimal* practice. As a result, specifications are most commonly used where the unusual is expected – whether it's related to environmental challenges, variances from common practice or novel expectations on the part of the client.

When specifying plaster surfaces in watershapes, most standard practices are acceptable. As was pointed out in the article "A Light on White" by Alan Smith (*WaterShapes*, September 2008), however, in some areas common practices have resulted (and are continuing to result) in substandard outcomes.

The purpose of this letter is to review the situation and determine if the practice of specification could resolve some of these issues.

As mentioned in the referenced article, "the basic [white plaster] formula underwent a number of important changes" subsequent to the good, old days of durable white plaster. Smith goes on to suggest that a major factor behind these changes was a switch to less durable, acid-soluble aggregates.

That's a fair observation, but the problem is that the cited deficiencies are *not* related to aggregate, but instead have to do with the even-less-durable cement paste. When specifying quality plaster, calling for an exposed-aggregate surface will actually decrease the surface area composed of paste: The stronger the aggregate, the more durable that portion of the surface will be.

There are additional standard ways of ensuring durable concrete products: Proper preparation of substrates; proper scheduling of placing and finishing; good finishing practice; proper curing; and, because calcium chloride is a primary factor in discoloration, calling for use of as little calcium chloride set-accelerant as possible – or none at all. It also helps to employ less hard finishing; call for as little water in the water-to-cement ratio as is practicable; and forbid practices that skew the *surface* water-to-cement ratio (such as wetting the finish or the finishing tools during final troweling).

Some of these quality-assuring practices are commonly used in the industry, but occasional violations of these good practices are also factors to be considered.

Let's look specifically at calcium chloride, which is commonly used by pool plasterers despite its declining use in non-pool applications. The move away from chloride accelerators in other fields has occurred in part because of its problematic relationship with rebar in reinforced concrete, but it has also been noted that it discolors finishes and generates a micro-porosity that allows greater water penetration than is the case if increasingly available non-chloride accelerators are used.

Some of the specific problems acknowledged by Smith in his article as being associated with white plaster – including discoloration and so-called spot etching – have been shown in laboratory research to be a direct result of the use of excessive amounts of calcium chloride. (Given that this practice is known to predispose the surface to breakdown and/or discoloration, this might be an area ripe for specification by the quality-minded professional.)

It has become routine for some in the plastering industry to apply water to a hardened surface during final hard troweling. This skews the surface water-to-cement ratio – a balance that has specifically been shown in some studies to promote surface discoloration and weakness, even in white and grey plaster or cement. (This practice is specifically prohibited by major color-additive manufacturers because of its whitening effect on the end product.)

These two practices combine to produce a whitened mottling within otherwise beautiful colored-plaster applications. And their use is so widespread that it has become "common knowledge that colored plaster mottles," which is a shame because these finishes are such useful additions to the watershaping palette – and doubly shameful because non-chloride accelerators are so readily available. (This is another specification that quality professionals should consider adding to their checklists.)

Finally, and as Smith mentioned, poor water chemistry is hard on plaster finishes. This is something that has been known virtually since the dawn of the swimming pool industry, and he is quite correct to point out its possible influence. But to ignore the elephant in the room by unfairly blaming water chemistry even when it isn't a factor in a particular surface failure is disingenuous.

It is a fact that pouring undiluted acid directly into swimming pools was a common practice in what Smith sees as the Golden Age of white plaster, but this practice nowadays is much more detrimental than his perceived issue with sanitizers.

In fact, the plastering industry's current practice of micro-specifying acceptable water-chemistry parameters by

tightening the acceptable ranges to unrealistic extents is a blatant means of assuring that *most* pools will be out of balance when problems occur – even if those problems are unrelated to water maintenance! At the same time, the plastering industry has steadfastly refused to accept reasonable, scientific standards when it comes to plaster mixes and application practices.

This mindset, in our opinion, is a major cause for the "conflicts among plasterers, the builders they work for and service providers" cited by Smith, who plays a leading role in the National Plasterers Council. The additional refusal of NPC and plasterers to acknowledge work being done by some of the nation's leading cement-failure analysts – researchers who have found certain plastering practices to be the culprit in certain plaster failures – is another issue to consider.

Smith suggests repeatedly in his article that white plaster is inherently weak and that water chemistry has become more aggressive since the 1960s. We disagree. What it took to create quality white plaster was understood more than a half-century ago, in the early years of the modern pool era. Those craftspeople understood their product and made it the industry's go-to finish.

Adding the fact that the modern chemical industry has improved water maintenance through education, research and scientifically-based standards, it is our hope that we can reach a point where quality plaster is something any builder interested in a quality outcome will be able to specify.

Que Hales, Doug Latta & Kim Skinner
Tucson, Ariz.

Editor's note: *Hales, Latta and Skinner are members of On Balance, an independent organization that conducts research related to plaster issues (including the effects of chemistry, materials and application techniques). They have been outspoken critics of industry standards regarding the application and maintenance of plaster surfaces.*

In This Issue

July's Writers

Rick Driemeyer is founder and president of Both Sides of the Door, a watershape and landscape design/build firm based in Oakland, Calif. His design career began in Ann Arbor, Mich., in the early 1970s, when he became a specialist in interior landscapes and watershapes. After moving to California and expanding his work to include exteriors, he established his current company in 1981, deriving its unusual name from the fact that he now works with both interior and exterior spaces. An Arizona native, Driemeyer traveled extensively as a child with his family and has lived in Florida and Pennsylvania as well as Michigan. He credits this exposure to different types of landscapes and his parents' love of the arts and nature as primary design influences.

Bob Harper is general manager of Pristiva, Inc., a subsidiary of Overland Park, Kans.-based Compass Minerals that is dedicated to production of materials for care of saltwater pools. With more than 20 years of industry experience and established knowledge of saltwater chlorination, Harper previously worked for Goldline Controls/Hayward Pool Products and BioLab. He attended college in New York and played ice hockey – a sport he continues to pursue to this day. He now lives with his wife and three daughters in Atlanta, where he enjoys a range of outdoor activities and coaches a girls' softball team.

Matt Doolin and Paul Doolin are partners and principal artists for Topanga Art Tile & Design, a manufacturer of

custom ceramic tile mosaics based in Los Angeles, Calif. The company was founded in 1978 by their mother, Leslie Doolin, who combined her lifelong dedication to the environment and her education in art in creating works of art on tile. Continuing the family tradition, Paul has a bachelor of fine arts degree in painting and science illustration from the University of California at Santa Cruz, while Matthew Doolin has a bachelor of fine arts degree in design from the University of California at Los Angeles. Their work includes vivid images of underwater scenery, botanical forms and classic tile graphics and has been installed in a variety of residential, public and commercial settings throughout the United States.

Randy Beard operates Pure Water Pools, a construction/service firm based in Costa Mesa, Calif. He was working in the entertainment industry when he started a pool service business as a sideline. Before long, he and his partner (wife Martha Beard) expanded their base by purchasing Pure Water Pools from another technician. As the route grew, they dropped their other jobs and focused entirely on the pool business as small repairs led to big repairs, big repairs to remodels, and remodels to new construction. Each year, the projects became more creative and technically challenging. Today, the firm works with many of the area's leading architects and landscape architects to create a range of custom watershapes for upscale commercial and residential clients.

Aqua Culture

Cascading Insights

By Brian Van Bower

When you take the time to look at the wonders of nature, you walk away with an armful of ideas that are extremely inspiring as well as enormously practical.

This past April, my wife Gina and I spent two wonderful weeks in Hawaii.

As is true of most of those who visit our 50th state, we were mainly there to relax and enjoy warm weather, tropical Pacific waters, breathtaking scenery, fine cuisine and laid-back Hawaiian culture. As has been the case for countless others who've been there, we were not disappointed: Hawaii is everything people have said it is and much, much more.

As a watershape designer, I had the added pleasure of being able to study a huge number of waterfalls and streams that mark many of the islands' most appealing landscapes, particularly on Maui and Kauai. It was one of those happy situations where my professional life merged with the personal pleasure I take in getting out in nature – a confluence that made the experience all the more rewarding.

Specifically, the trip gave me a great excuse to indulge my abiding interest in how water works in natural landscapes. Waterfalls, streams and ponds have always fascinated me: In my Hawaiian "laboratory," I had a chance to focus on nature's handiwork in ways I'm certain will influence my work for years to come.

an eye for it

This notion of the value of studying nature to inspire watershape design is, of course, anything but new: Landscape architects, pond/stream specialists, Japanese gardening aficionados and a host of people from other design disciplines often espouse the importance of studying nature as a primary educational resource.

That makes perfect sense for those who aspire to create naturalistic ponds and streams. In fact, without these explorations, it would be impossible to be successful in such endeavors: To replicate nature, you must first understand it in great depth, detail and nuance.

For those of us from the pool/spa side of the watershaping universe, however, it might be said that the need for such familiarity is less certain. After all, most of our designs are architectural in character, and even in cases where we use naturalistic design elements, we usually do so in symbolic, representational ways. Indeed, only a very small number of swimming pools succeed in mimicking nature so completely that any observer would be confused about the humanity of the source.

This begs the question: What is there to gain in studying nature if what we do for a living is design Contemporary-, Grecian- or Modernist-style bodies of water?

To me, the answer is simple: When you take the time to look at the wonders of nature with an open heart and an open mind – as I did during my recent trip – you walk away with an armful of ideas that are extremely inspiring as well as enormously practical.

It all spins off the fact that, in a place like Hawaii, water is the dominant, centermost element just about everywhere you turn. Surrounded by the Pacific Ocean and shot through

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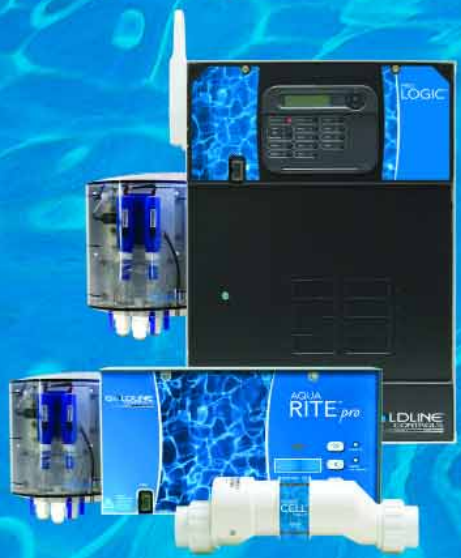

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Speaking for myself, the places I saw put me very much in contact with a recognition that my basic function as a watershaper is to provide my clients with similar opportunities for joy, discovery and visual engagement in all sorts of aquatic environments.

With that profound backdrop, let's step out into the Hawaiian landscape and consider some of the "technical" lessons nature has to offer in places such as this.

on the road

One of the big highlights of our April trip was a sojourn along the famous Road to Hana. A perennial favorite on any tour of Maui, this winding thoroughfare takes you into the heart of wild Hawaii through lavish jungle landscapes, across breathtaking cliff faces and past countless waterfalls. (If you were to stop at every set of falls and consider them with a designer's eye, it would probably take several days to make the trip there and back.)

We stopped at several points along the way, with Gina waiting patiently as I took scores of photographs and spent quality time considering the subtleties of these places. The more I saw and heard, the more I recognized that this experience would not only prove to be influential but would also be both valuable and utterly indispensable.

First, for all their *visual* beauty, Maui's waterfalls serve as a sort of aural studio where you hear just how varied and important an element the sound of falling water can be. Although I'd be hard-pressed to identify the most important of all the design lessons I picked up during this trip, I am perfectly willing to say that the things I learned about sound were definitely the most unexpected.

In the world of watershapes in general but especially with swimming pools, the sound spectrum we generally work with is extremely limited compared to what we encounter in nature. We tend to think in terms of edges and weirs and nozzles and pushing water

While on the road, we often stopped to watch waterfalls rolling down huge rock faces – often as relatively slight volumes that seemed to split, reunite and rebreak into fresh flows and were flanked by other falls that seemed to come out of nowhere.

from one level to another as ends in themselves: Even when we build waterfalls that spill into lagoon-style pools, our treatment of the medium tends to focus on the visual with scant attention to the sounds the water makes.

Happily, nature plays by a different set of rules dictated by the available volume of water, the nature of surrounding rock and plant material, the pitch of the slope, the course of erosion and the influence of seismic and volcanic activity. What we see on the Road to Hana is mind-blowing variety that exceeds anything the average pool designer would encompass in approaching any given project.

Speaking for myself, I was blown away by how waterfalls will send small sprays or rivulets across the faces of large rock formations, creating sounds unlike anything I've ever heard in the presence of a pool, spa or fountain. These sidestreams provide undertones that lend depth, variety and odd resonance to the sounds made by the steadier rush of the larger, more coherent flows that make up the main part of these streams.

It's like a dance: It's great to enjoy the visuals and the way the water splashes, divides, recombines, tumbles and flows, but when you start *listening* with the same intensity with which you're *watching* and begin to perceive the range from near-silent to nearly deafening, you get caught up in the moment and become part of the scene in amazing, joyful ways.

In the most practical terms, listening to this infinite symphony has taught me that I need to consider the sounds my work generates in far greater detail. In many cases, I suspect that my watershapes make more noise than they should and that there's too much uniformity in their auditory range. My sense now is that while these sounds can be novel and enjoyable for a while, over time I fear that they might become monotonous and too aggressive for comfort.

That's definitely not what I want to do! After listening to the falls on Hawaii, I'm going to experiment much more with "tuning" my systems and tailoring both sights *and* sounds to suit the needs of individual settings.

visual volume

One of the interesting things about the sound of moving water is how distinctly it ties into its appearance. Water spilling over the edge of a uniform weir makes aural and visual impressions that are, to me as a watershaper who has seen hundreds if not thousands of such details, entirely and inextricably linked within my memory.

What I found along the Road to Hana is that nature works across an almost infinite set of random variables that make the observer abandon assumptions and think about the relationship of aquatic sights and sounds in completely differ-

I was fascinated by places in which I saw all of water's potential appearances captured in a single scene: Sheer sheets, aerated whitewater, reflective surfaces and surging flows all visible, all at once, within the span of a few feet.

ent ways. Returning to that abovementioned trickle of a side stream flowing over that large stone and the unexpected extent of its contribution to the majesty of the main flow: The impression it made by barely wetting the stone surface alongside a vast torrent of water is one I'll never forget.

As I see it now, pool designers and builders tend to send flows of water over natural or artificial rock structures that we "scale" to the size of the hardscape, going with big flows with big rocks and easier flows with smaller ones. Nature certainly doesn't work that way and doesn't care at all whether a formation of large rocks boasts either a flood of water or a trickle. My intention now is to consider the scale of the water as a separate issue from the scale of my rockwork and see where a more nuanced approach carries me.

And the lesson doesn't apply just to naturalistic settings: In fact, I see it as being just as important in architectural designs. I know that a few watershapers (including my friend and Genesis 3 partner David Tisherman) have gone a long way toward reshaping the way we think about spillways and issues of relative scale between water flows and the structures that surround them, but until I saw what I saw on the Road to Hana, I lacked a visceral understanding of why it was so important.

Another point: Nature has an amazing way of combining and distributing stone material of various sizes. Time after time, I saw huge boulders and imposing formations juxtaposed with small stones and even pebbles. As evidence of erosion, stone tumbling and other natural forces, this near-infinite variation in sizes creates tremendous visual interest. I recall standing in one spot watching a large waterfall cascading down a cliff face across huge boulders; when I moved in for a closer look, I saw a clear pool filled with pebbles. With just a few steps, I rewarded myself with a second, distinctly different aesthetic experience.

At other times, I saw small boulders positioned at the foot of large, sheer waterfalls in such a way that they created secondary cascades – and immediate visual contrasts with the falling sheets of water. In these and countless other situations, not only does this arrangement of stone material provide contrasts in scale, but also different textures as the water moves over, around and through the formations. All in one space, I was treated to views of aerated whitewater; sheer sheets of water; quiescent, reflective surfaces; and uneven rills and runnels of water flowing swiftly across the rocky bottom.

a different perspective

During our trip, Gina and I visited waterways up close on the Road to Hana and along other trails, but while we were on Kauai we took the opportunity to board a helicopter for a tour of an array of waterfalls that are basically inaccessible to average tourists.

In most cases, of course, artificial watershapes do not reach the scale of a waterfall so immense that you need to be airborne to take everything in, but even here I found that even the largest of the waterfalls we saw are marked by the same sort of variability and variety I observed on the ground at eye level. In all cases, nature moves water through topography in unexpected ways, large and small, that are simply engrossing to anyone with eyes open to the possibilities.

(As a side note, I found myself comforted by the fact that even in a state as well traveled as Hawaii, there are still wild places that have been left entirely to nature – locations reachable only with miles of difficult hiking or by aircraft. The fact that we go to such extremes simply to see these places speaks eloquently of the profound importance and fascination of moving water.)

In the helicopter and on the land, I also learned something of the profundity of a principle espoused tirelessly by landscape architects – that is, the power of concealing and revealing views. The falls of Hawaii provide tremendous examples of this fundamental design concept, and I see with greater clarity than ever before that it can be applied to great effect in almost any type of design.

In many ways, this concept cuts back to one of the keystones that has driven the content of this magazine as well as our work in developing programs for Genesis 3: Watershapes and the landscape are not separate and must instead

exist in context and together.

Natural landscapes such as those I saw in Hawaii serve as vast, living examples of this principle. Whether from the air at a distance or on foot in close proximity, I was always struck by the way plants interacted with stone and water and, in many cases, beautifully obscured and sometimes completely hid parts of the scene.

In many places, for example, I could see a portion of the falls but had to move to another location (often just a few feet away) to avoid greenery that kept me from taking in the entire scene. Once in my new location, I'd often find that I needed to move again, because this new viewpoint led me to discover adjunct formations or new sets of pond and cascades. In these settings, I inevitably found that I was rewarded for using my feet.

It made me consider the common fact that with pools and spas as well as fountains, there's a near-irresistible tendency to present entire scenes that are completely visible from various primary viewpoints. Now I'm thinking that, by arranging spaces with elements that shelter views (plants, fences, hardscape structures, rock formations), I'll be able to do a far better job of generating a sense of anticipation and reward by not showing everything off all at once.

mysterious ways

In a sense, I felt as if the explosive greenery of Hawaii was working on me in much the same way as wrapping on birthday presents or, at the risk of revealing too much about myself, a woman's lingerie: The object of interest is beautiful to begin with, but you know there's something hidden from view that's even more exciting. The anticipation is what makes the journey of discovery so compelling.

I witnessed similar processes of revelation in Hawaii and enjoyed the fact that the sense of discovery is enhanced not only by what's right in front of you, but also by what lies beyond the primary views. In other words, as you move up one of these bodies of water to higher elevations, what was once a backdrop becomes a new foreground – a tranquil pool above raging falls, perhaps, or another set of waterfalls unseen from below as you moved uphill.

In nature, of course, that chain of discoveries can flow on for miles – but even scaled down to backyards, this concept of backdrops creating interest that reaches mysteriously beyond the primary vignette strikes me as being extremely useful. Designing with backdrops in mind, for example, opens up the potential of using distant views as design elements. Our work may stop at the property line, but rather than creating a visual boundary in the form of a fence, maybe we can alter the barrier by planting it with vines that lead us to enjoy the greenery of distant hills or mountains.

Nature, of course, also has a distinct tendency to do things in ways we'd never attempt in our work simply because they look fake, disruptive and entirely man-made.

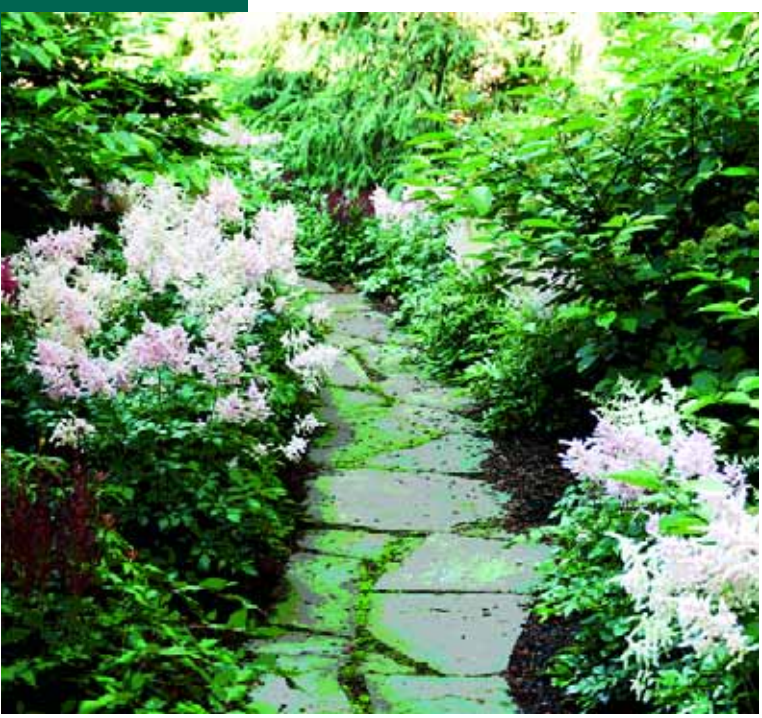
I saw places where water gathered in channel and ponds where I knew that if a watershaper had done this, I'd have critiqued it as a terrible mistake – but here it is, right in front of me, as natural as could be. On the one hand, it makes me feel empowered to do something jarring or discordant; on the other, I have the sense that such liberties can be reasonably taken only by Mother Nature herself and that I have no standing to do so in my designs. Regardless of what my hands tell me, however, the ideas are there and will almost certainly express themselves in ways I can't anticipate.

Was this trip worth it? In a word, *yes* – despite the fact I had a touch of the flu that kept us from doing everything we'd planned. These journeys are incredibly valuable not just for taking you away from the day-to-day press of business, but also for the opportunities they give you to observe and learn. WS

We kept encountering waterfalls that, in the context of common naturalistic watershaping, made nature seem playful and staggeringly 'creative' – as in this place, where a gushing torrent is joined by a trickling flow just before it reaches a pond.

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.

On the Level



All I can say about a client's desire for grass is *why*? Lawns require vast amounts of water, care, fertilizer, pesticide application and mowing.

Grounded Value

By Bruce Zaretsky

In recent weeks, I've spent a good bit of time speaking to landscaping colleagues, garden clubs and symposium attendees about our general need to get smarter when it comes to how we think about landscapes. This is all part of my perpetual campaign to convince everyone to use the right plants in the right places in order to save water, labor and the fuels consumed in maintaining them.

A big part of my pitch is one I've addressed before in this space – that is, I object to installing large expanses of lawn just for the sake of having them.

Some landscaping professionals don't like it when I speak up or write about this, basically because many of them make good money mowing lawns. But all I can say about a client's desire for grass is, *why*? Then I let them know that, if they want theirs to be healthy and golf-course green, lawns require vast amounts of water, care, fertilization, pesticide application and mowing.

In my book, that makes them undesirably costly, environmentally suspect, energy inefficient and hard to rationalize. And besides, there are so many good alternatives!

off the grass

Every spring (including this one so far), I receive innumerable calls from clients and prospects who want us to come out and revitalize lawns that suffered through a rough winter. In almost all cases, the areas they're most concerned about are beneath the canopies of large, mature trees, including maples, oaks and lindens.

Every spring (again including this one so far), I become a broken record, repeatedly saying, "No, you can't grow grass in this situation." Almost invariably, they come back at me with words to the following effect: "But when I seeded last spring, the lawn came in and looked great – then it withered in the summer."

The reason for this, I tell them, is dirt simple: Grass is a full-sun plant and does not fare well in shade. In addition, it competes for water with the mature trees, and a lawn will lose that battle every time.

This is why I get so agitated with many of my colleagues, who will go out in spring, tear out clients' lawns, top-dress the space with nice soil and then seed or sod the area. It'll all look absolutely great when the client signs the check, but by summer, areas under tree canopies will have begun showing signs of stress. I can't fault the homeowner for not knowing this will happen, but I do fault professionals who either don't know any better (but should) or *do* know full well what will happen and take their clients' money anyway.

That's one of the reasons why I spend so much time speaking to groups of homeowners as well as professionals: My Big Idea, oft repeated, is that grass should not be planted in these situations, that there are better ways to deal with these spaces, and that the options require less maintenance, less water and are, quite frankly, easier on the eye.

This is when I start pressing everyone to think about groundcovers and the huge range of possibilities my audiences – professional and civilian – have in making better, more efficient use

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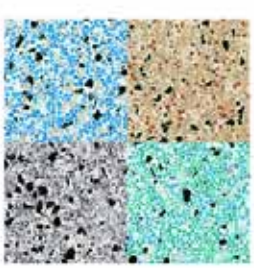

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of available, shaded spaces.

Here in the northeast, for example, evergreen groundcovers such as Myrtle (also known as Vinca) and Pachysandra are quite popular and reliable and do very well in shade. These are typically planted as rooted cuttings at intervals of about eight inches on center and will spread and completely fill in an area in about two years – if, of course, the soil has been prepared properly.

Both of these groundcovers (along with the less-used Wintercreeper, a groundcover version of Euonymus) are, as I mentioned, evergreen. Myrtle flowers in the spring in either white or purple and is very impressive when in full flower. Pachysandra's white flowers are less impressive but plentiful.

All of the evergreen groundcovers spread relatively quickly and will carpet an area with a dense mat of foliage. They will also suppress weed growth (although in my experience Myrtle can have a bit of

Japanese Primrose is a wonderful and under-used perennial that serves well as a groundcover. It can handle full shade and very wet sites – and combines beautifully with Astilbe (seen in the photograph on this column's opening page) and Hakonechloa (seen on page 22) to brighten up darker areas.

an issue with grass growing up through it) and in time will require little or no maintenance.

made in the shade

As is true of just about any plant in shady situations, each of the three evergreen groundcovers just mentioned can have issues with biological afflictions. Pachysandra and Myrtle, for example, can be susceptible to periodic problems with fungal diseases that will cause unsightly curling of their leaves – problems that are readily treated. As a Euonymous, Wintercreeper commonly has issues with gall and scale.

Beyond that, a far bigger issue for me with all three of these plants is that they're tremendous leaf-catchers. When leaves start falling from trees above these plantings in autumn, they get caught in every nook and cranny they can find, and the only efficient way to remove them is with a rake that very likely will pull out some of the groundcover as well. And you can't just let well enough alone: If the leaves accumulate, they'll form a mat that can smother the groundcover.

My recommendation is the obvious one: Avoid using these groundcovers under dense trees and shift gears toward use of a whole range of perennial groundcovers. (In doing so, I don't take that word "groundcovers" too literally, because almost *any* plant can be considered a groundcover if it's used that way.)

What I look for are perennials that don't grow very tall, but I'm not terribly picky. So where Myrtle and Pachysandra top out at about six inches, with perennials and shrubs as groundcovers I tend to be more liberal and will even use Dwarf Forsythia, which grows to be about three feet tall. As I see it, the most important feature of whatever plants I decide to use is that they must all do well in the shade of dominant trees.

Forgive me, but I'm now going to discuss some plants that are familiar to me here in the northeast (Zone 6). I do so knowing that varieties of most (if not all) of them will survive (and even thrive) in climate zones throughout the 48 contiguous states.

When I'm looking for a carefree, no-hassle groundcover for clients who just want to cover an area with whatever is available, I'll choose Sweet Woodruff (gallium odoratum). It's a soft, six-inch-tall perennial that spreads prolifically throughout shady and semi-shady areas and flowers in the spring with a wonderful fragrance (hence the "Sweet" part of its name).

To me, Woodruff is the best of the traditional groundcovers, mainly because it requires almost no care. We'll plant it from two-inch cell packs at intervals of about eight inches on center and let it go. Within two years, it will fill an area completely, and it's a great plant for barefoot walking, especially when it's in flower in the spring.

As for dealing with falling leaves, I recommend to my clients that each fall, just as the leaves on the trees are changing, they should run a lawn mower over the Woodruff (or use a weed whip) to cut it to the ground. So when the leaves fall in abundance, all that's needed is to rake them up. It's so easy that never, ever has a client expressed any regret about our planting Woodruff.

Continued on page 22

This is one of those cases where my definition of 'groundcover' is clearly a bit broader than usual: Hakonechloa (also known as Japanese Forest Grass) doesn't hug the ground, for example, but it spreads nicely, does well in filtered sun and can look great around waterfeatures, where its drooping structure is reminiscent of cascading waterfalls.

perennial favorites

There are, of course, many other perennials that perform wonderfully in the shade of large trees or copses. With these possibilities, however, shade tolerance is only one of the parameters I consider, with site moisture (wet or dry) being the other.

In most residential situations, dry is the norm. Indeed, one of the reasons grass fares poorly under canopies is that the trees hog all of the water, so I've spent a lot of time evaluating plants that will tolerate shady, dry environments. Although this list of plants is somewhat limited, there are nonetheless some stunning choices that will thrive, look good and do a fine job of keeping other, undesirable plants from taking hold.

My first choice among perennials for dry, shady spaces is Pulmonaria, a perennial that will actually behave like an evergreen in mild winters and features bright, white-polka-dotted leaves and small but spectacular flowers in both blue-purple and pink on the same plant. One of the best things about it is that Pulmonaria is among the first plants to flower in spring. The variety "Mrs. Moon" has large leaves and grows to about 24 inches wide, quickly filling an area.

Other Pulmonaria varieties, including "Bertram Anderson" and "Little Blue," are beautiful plants worth consideration in dry-shady situations. I also use perennial Geraniums, one variety of which is native to northeastern forests and flowers early in spring. Geranium maculatum is a favorite of mine, and I also frequently use the "Rozanne" and "Dilys" varieties where there's a bit more sun exposure.

Lamium maculatum is another variegated perennial that has the virtue of being able to withstand all sorts of abuse. It recovers very well when walked on or dug through – and flowers in either pink or white throughout the season, spreads quickly and brightens shaded areas with its mixed white-and-green leaves.

I also use Solomon's Seal (polygonatum odoratum), another variegated plant that grows in a more upright fashion to a height of 18 to 24 inches. It takes a year or two to get going, but once it does, it will quickly fill an area and has white flowers hanging from its crescent-shaped form.

Damp or wet areas call for different plants, and my first choice is usually Astilbe. I'm partial to this perennial because of its stunning plumes of flowers. In addition, by mixing varieties and species, I can establish spaces that will have flowers from early June right through to the end of August – and even the spent flowers are spectacular.

(I grow seven Astilbe varieties for my own use and have a test plot of another 54 varieties. They come in colors ranging from white, pink and lavender to burgundy and red and span heights from 18 to above 48 inches. It is by far the best perennial there is in my book.)

Another perennial for damper locations is Hakonechloa (Japanese Forest Grass). This chartreuse weeping grass does a wonderful job of brightening shady areas, growing to about 18 inches before drooping like a cascading waterfall. It has such a pronounced "aquatic" aspect, in fact, that I often use Hakonechloa alongside waterfeatures to mimic falling water – or use it in waterless Asian gardens as part of dry falls.

A final plant to consider for damp shade is Japanese Primrose. This prolific spreader has white or fuchsia flowers atop eight- to ten-inch stalks and is a great companion to both Astilbe and Hakonechloa. In fact, I frequently mass these three plants together in sweeps to bring drama to shaded spaces.

This is just a brief sampling of what can be done as alternatives to the lawns that almost certainly will fail in deeply shaded areas These groundcovers are all easy to work with, solve substantial design problems and offer clients stunning vistas that will make them forget all of the frustration they experienced through years of trying to make a lawn thrive where it simply couldn't make the grade. WS

Bruce Zaretsky is president of Zaretsky and Associates, a landscape design/construction/consultation company in Rochester, N.Y. Nationally recognized for creative and inspiring residential landscapes, he also works with healthcare facilities, nursing homes and local municipalities in conceiving and installing healing and meditation gardens. You can reach him at bruce@zaretskyassociates.com.

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A Call for Reformation

By Mark Holden

I don't know about you, but I believe that tough times call not for submission, but for direct, provocative and forceful action.

"I'm mad as hell, and I'm not going to take it anymore."

Those words (originally uttered by the fictional newsman Howard Beale, for those of you who remember the movie "Network") reflected the frustration of a man overwhelmed by the forces that governed his working life and the society in which he lived. His declaration became the rallying cry of a movement that formed around his sense of outrage.

I'm in that same sort of outraged mode right now and find myself on a similar quest for allies: I want the watershaping industry to change *now* and for the better, but what I see instead are people "waiting it out" until the market gets better and the world decides to hire us again. I don't know about you, but I believe that tough times call *not* for submission, but for direct, provocative and forceful action.

Waiting won't help us get beyond our industry's predicament, which predated – but has definitely been exacerbated by – the current economic crisis. Trouble is, our watershaping gene pool is so degraded these days that pulling ourselves out of our greater, longstanding mess seems difficult to the point of impossibility.

It's the sort of situation that makes it tough to stand in front of classrooms of landscape architecture students and persuade them that they need to know all they can about watershaping – that this knowledge will be valuable to them in their careers. Here I am, doing my best to attract sharp young minds to the industry, and the industry returns the favor by making me so mad at it that I wonder if I'm doing the right thing in being so persuasive.

It's time, I think, for a Reformation.

rocky currents

My jaundiced view of the watershaping industry began to develop long before the economic downturn. For years before 2008, I watched as trade associations and major suppliers basically told us what to design and what to build – and reinforced their domain by handing out awards to those who played by their rules.

Certainly when the economy was booming and home-improvement or commercial-development funding could be found simply by getting up in the morning, many of us were lulled into a false sense of security. But with the pressure of the past year and more, we can now see that the rules by which we've been cajoled into playing have left us without revenues, without business stability and without the skills needed to refocus and find ideas that will save us.

It gets worse, because in our weakened condition, we've had our cages rattled by the federal government and local municipalities about drain configurations – the upshot being half-baked laws that came with no consistent interpretation or ready means of compliance.

If you doubt that, just ask two plan checkers or inspectors from the same department to explain the Virginia Graeme Baker Act and what it means: Chances are better than good that you'll get two completely different readings. It's not their fault, really: The rules are thin and enforcement is as varied as the information and instruction officials have been given – which is

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The Grandeur of Longwood Gardens

Robert Nonemaker's pictorial tour of Longwood Gardens ("Garden Grandeur," October 2008) focused on the watershapes that highlight the 1,050-acre estate in southeastern Pennsylvania. While those fountains, ponds and waterfeatures are fabulous and more than worthy of your attention, we didn't want the opportunity to pass without showing you some of the other photographs the garden sent our way.

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nothing at all in many cases.

To be honest, pool-code management has never been either objective or consistent: All of the noise about the Virginia Graeme Baker Act has only brought those basic flaws rampaging to the surface.

The pain of all this has all been compounded by the fact that our industry's leading trade association backs educational programs that are really nothing more than marketing agendas: They don't succeed in teaching anyone about the dynamics of design or construction; instead, they've fostered an army of drones who see watershaping as a simple exercise that involves working off sets of templates and calling in subcontractors to repeat the tasks they performed last time and the time before.

That's all well and good in boom times, but it's not exactly a visionary perspective – and it certainly hasn't done anything to prop up watershaping to withstand current market conditions. And now, to put the cherry on top, I get notices on my material invoices that product costs are rising? Shouldn't the opposite be happening in a supply-and-demand economy? I get it, of course: The powers-that-be are asking that survivors carry them until things get better.

I can't help noticing that what they're doing makes no sense at all. I may be naïve in saying this, but at a time when the love of money isn't working as a strategy, isn't it time to develop an affection for something else?

aquatic design

For the most part, future landscape architects receive little (if any) education about water. Without that education, they come out of school and look to the building trades for support and ideas – just as they do with drainage and irrigation – and get caught in a product-based design process they can't seem to avoid. There's no innovation in such a "process," and it's absurd to call it "design."

Don't get me wrong: I'm not saying that landscape architecture is a bastion of innovation. In fact, it's largely filled with people who accept conventional thinking and don't buck when they encounter limitations. When those rare and wonderful students come along who *do* want to escape the trap, however, there's almost nowhere for them to turn.

Under those circumstances, substantial numbers of these new practitioners do what landscape architects have done for generations as a result of being burned by their dealings with pool builders: They leave water out of their projects or hold their noses and accept the fact that the watershapes they get will not be all they would be if they were fully integrated into the design program.

This point underscores a basic imbalance: As I see it, most designers intuitively understand the emotional need to enhance and beautify spaces as well as to get paid for their work. As a rule, builders don't share that sort of infatuation with their profession, and that's a shame because I think the lack of emotional involvement leads to apathy and acceptance of the status quo.

I propose that we teach anyone, from any background, whatever it is they need to know to create better watershapes.

The result of that dynamic is that landscape architects don't know enough about building watershapes, builders don't know how to design watershapes – and the industry that surrounds both is consumed with worry that there's nobody out there to buy its products. What a predicament!

Even when the economy was good for everyone, this was a flawed foundation for the industry – a failing that's high among the reasons why the watershaping industry has never been held in high regard within the architectural trades. Yes, I'm mad as hell, because I like working with water, enjoy teaching about its uses and want to be part of an industry that radiates confidence and enthusiasm about its potential. Instead, I'm stuck with a bag of nails and no hammer.

When I speak to future landscape architects about the watershaping industry, I have a tough time explaining away the fact that there are so few crusaders and real visionaries out there who will help them in their pursuit of liquid perfection. As a landscape architect and pool builder, I have a fondness for both professions – and reservations about them, too. I see where they've done great things right alongside their deficiencies, and mostly what I want to do is elevate both of them as arts and crafts.

Trouble is, very few watershapers see things this way or find any value at all in the notion of advancing the whole industry. Instead, too many are singularly focused on their own progress, with little or no regard for the larger, water-oriented family of which we all are a part. As I see it, that sort of rugged individualism leaves us little or nothing on which to build a respectable profession.

progress

How do we change this? With the sales of watershapes dramatically (some would say *tragically*) down from where they were a few years ago, we are at a crossroads and, I think, must choose to develop new strategies and products. When we innovate, we lead – and we desperately need to lead right now.

We also need *leaders*, so I propose that we reach out and teach anyone, from any background, whatever it is they need to know to create better watershapes. Landscape architects are eager to learn, which is more than can be said for most branches of the watershaping tree, but they're not the only ones out there.

I say we shake all the branches – the ones with architects, service technicians, city planners, general contractors, fine artists, interior designers, even homeowners on them. What if we empowered them to generate designs that helped us all financially? Would that be so horrible? After all, they possess skills and knowledge that are in thin supply in our own industry: I see nothing wrong with expanding our industry's designer demographics, especially when

the alternative is circling the wagons and dodging incoming fire.

I've always felt that such an expansion of awareness and participation would help everyone. It's a liberal posture for a businessperson to take, but if openness produces profit for all of us, shouldn't we all be pleased with the outcome?

Here is the crucial part of this idea: If we are to recover financially, then we need to encompass all of the watershaping community and broaden it. We also need to establish some sort of forum for designers, builders, manufacturers, regulators, money people and, yes, *consumers* to establish procedures and guidelines for this broadening.

I see suppliers as a bottleneck here: They've never been known for their community spirit and tend instead to isolate their preferred clients by giving them trips or discounts or special warranty extensions. The regulators are a hurdle as well, especially in jurisdictions where the show is run by people who know little or nothing about building watershapes. As designers and builders, however, we have the ability to overcome *both* obstacles – and indeed *must* do so to improve our industry and the realm in which suppliers make products and regulators oversee their installation.

To do so, of course, we watershapers must step up our game. The concept of being able to hack your way through a project will come to an end as the general public becomes aware of how things should go. Look at what Home Depot has accomplished: Before its emergence into the world of end users, there was a certain mystery to obtaining drywall, for example, or electrical supplies. Now almost anyone can build a complete home by paying attention in a Home Depot or one of the other big supply houses.

How long would it take for watershape construction to become that transparent?

In this new situation, watershapers can maintain their roles only by elevating the qualities we currently possess that make each of us unique and valuable. It will be a world in which an understanding of design, materials, safety codes, construction and proper project management are so well structured and so far beyond what the general population can accomplish on its own that we could demand more for our work and ensure long-term success for all of us.

solutions

I know that I've ranted and maybe even raved a bit here, but this has all been about stimulating thought and getting us to break out of bad habits that are dragging so many watershapers down. It's time to stop perpetuating methods of operation that blossomed in the 1980s and have left us high and dry in 2009. It's time to establish a real forum that will help us plan our next steps and approach the future with hope and ambition rather than fear or apathy.

A complete Reformation of the watershaping industry is needed. No bandages will fix it: We need to rebuild it from the ground up.

My call to arms is this: I say we should assemble a diverse body of people and start open discussions the likes of which we've never witnessed before. I'm not after a marketing strategy or tips on code compliance or a debate over pricing structures. Instead, I want to convene a Water Council and start discussing where we all want to go and what we need to do to get there.

We need to get creative and stop relying on conventional wisdom and existing hierarchies. Personally, I'm heading in new directions all the time and have started performing work that, even six months ago, I would have walked away from as being outside my scope. It's a new perspective that has actually enhanced my core services and improved my overall situation: Change makes sense to me now, in other words, and will result in exponential growth when the economy gets better, as it always does.

Outside my own business, I'm focusing all the energy I can on teaching designers how to *lead* projects rather than *complicate* them. I also spend time brainstorming with colleagues about new products that will help the environment at the same time they result in revenues – the opposite, I think, of taking an old product and relabeling it as "green" or "eco-friendly" and foisting it off on the marketplace.

It's time, I think, to come clean and say that our old ways are actually old. In that light, change is not a bad thing: I remember running around with a pager and a roll of quarters, stopping by payphones to answer countless calls that could have waited. Cell phones have helped our businesses, made travel safer and kept us in contact with our loved ones in ways we never could have imagined.

As I was writing this column, I became aware of a presidential summit meeting on healthcare issues held in March 2009. Attended by congressional leaders, representatives of the insurance and pharmaceutical industries, doctors, nurses, hospital administrators, union leaders and corporate executives, the session was all about pulling off the blinkers and viewing common problems from new angles.

Especially in times of crisis, such councils allow everyone to speak up and be heard. Out of these processes come reports and action plans that tend to be set aside unless there are leaders within the councils who insist on making things happen. Not to seem more idealistic and altruistic than I know I've seemed so far in this column, but it's time for us to sound the bell, gather at the table and get to work.

Ask yourself this: Are you better off than you were three years ago? If you say "no," you're among those most likely to have an opinion of how things should be changed.

So let's hear it: Send me an e-mail directly (*mark@waterarchitecture.com*) or send it to *edit@watershapes.com*. It's time: Raise your voice above those we've heard from over and over again.

Let's make noise – and maybe figure out a time and place where we can gather together and shape a better future for watershaping! WS

Mark Holden is a landscape architect and a landscape and pool contractor specializing in watershapes and their environments. He has been designing and building watershapes for nearly two decades, and his firm, Holdenwater of Fullerton, Calif., assists other professionals with their projects. He is also an instructor for the Genesis 3 schools and at California State Polytechnic University in Pomona. He can be contacted at mark@waterarchitecture.com.

By Rick Driemeyer

Safe

While focusing on naturalistic watershapes and finely crafted garden spaces, northern California's Rick Driemeyer has developed an unusual specialty in creating environments that are safe and nurturing for a variety of animal species. This wrinkle, he says, allows him to explore his passion for nature, but it also informs his plant choices, determines the configurations of his watershapes and necessitates unusually close interaction with clients.

It's one of the unavoidable results of living in urban or suburban areas: People who dwell in mostly built environments feel cut off from nature. This, of course, is one of the reasons why ponds and streams have become so popular among so many homeowners.

Adding spice to the sauce, I've found in recent years that this desire for naturalistic watershapes and elaborate gardens has also been attended by a desire on the parts of many of my clients to attract various forms of wildlife to participate in the setting. And it's not just about fish in their ponds: With increasing frequency, my clients are also asking me to design and build spaces that will comfortably host a variety of creatures, including frogs, turtles, birds, insects and even small mammals.

For my part, I've come to see this as a reasonable extension of watershape and garden design and have become fascinated by what's involved in developing spaces for wildlife. It's a nuanced challenge – one that requires a specific understanding of the needs and behaviors of various species as well as unusually clear communication with that most complex of creatures: human beings.

Starting wth Water

The foundation for all of this is the fact that more and more of my clients recognize and accept the notion that built ecosystems of any kind will function fully and well only if there is a balance of creatures – especially in places where the natural environment has been entirely subjugated by humankind. Indeed, they often tell me that they are aware of just how many species have inadvertently (or even deliberately) been wiped out as a result of urban development.

Whether you call this type of thinking idealism, environmentalism or just common sense, the fact is that many people see their gardens as places where they can do their part to recapture the balance, even if it's just in a small way.

And it doesn't hurt that most people are transfixed when they get the chance to see animals close up: There's nothing to compete with the joy, for example, of seeing a hummingbird nest filled with chicks or hearing frogs croak on a warm summer evening. Moreover, quite often my clients will tell me that they grew up in areas where they had abundant wildlife around them and that they want to get back to those sorts of experiences.

Whatever the motivation, I believe that watershape and landscape professionals have a wonderful opportunity to bring these pleasures to homeowners by considering fauna as a dynamic, practical design element. This can be tricky, however, and the balance you're after can be hard to achieve: There isn't a client anywhere, for example, who wants you to develop a backyard that becomes overrun with rats or other rodents that have arrived to compete with desirable creatures and end up destroying the setting.

To be successful, we must be aware that, as in nature, any space that meets the needs of one type of animal will very likely be ideal for the needs of many others. So where we tend to think of birds and fish as being very different from one another (as well they are!), a pond that is good for fish will also likely be good for birds because of the insects that gather near the water and in the plant material we arrayed to generate bacteria that benefit the fish.

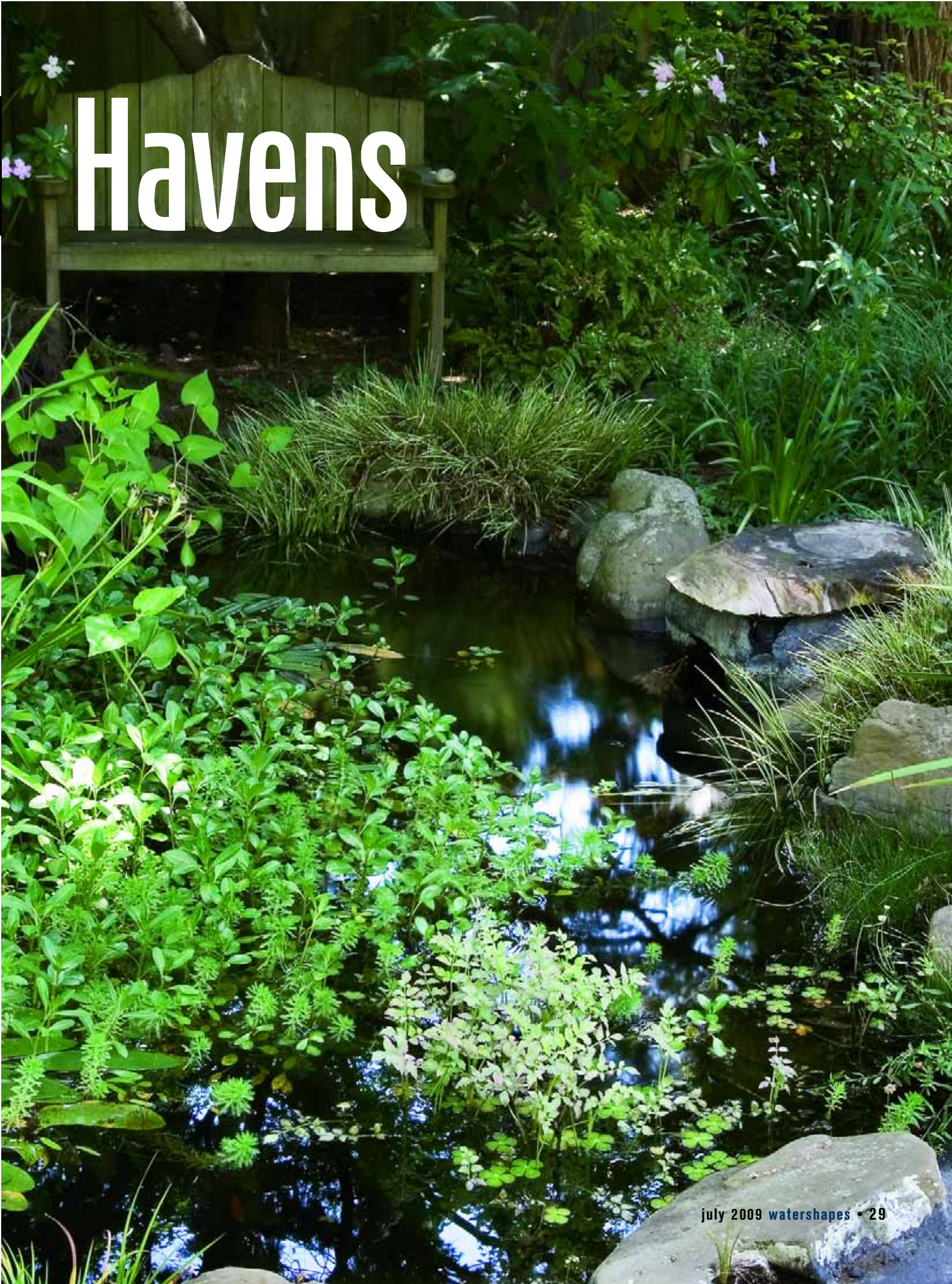
In other words, water is the unifying element and *always* occupies the heart of this discussion.

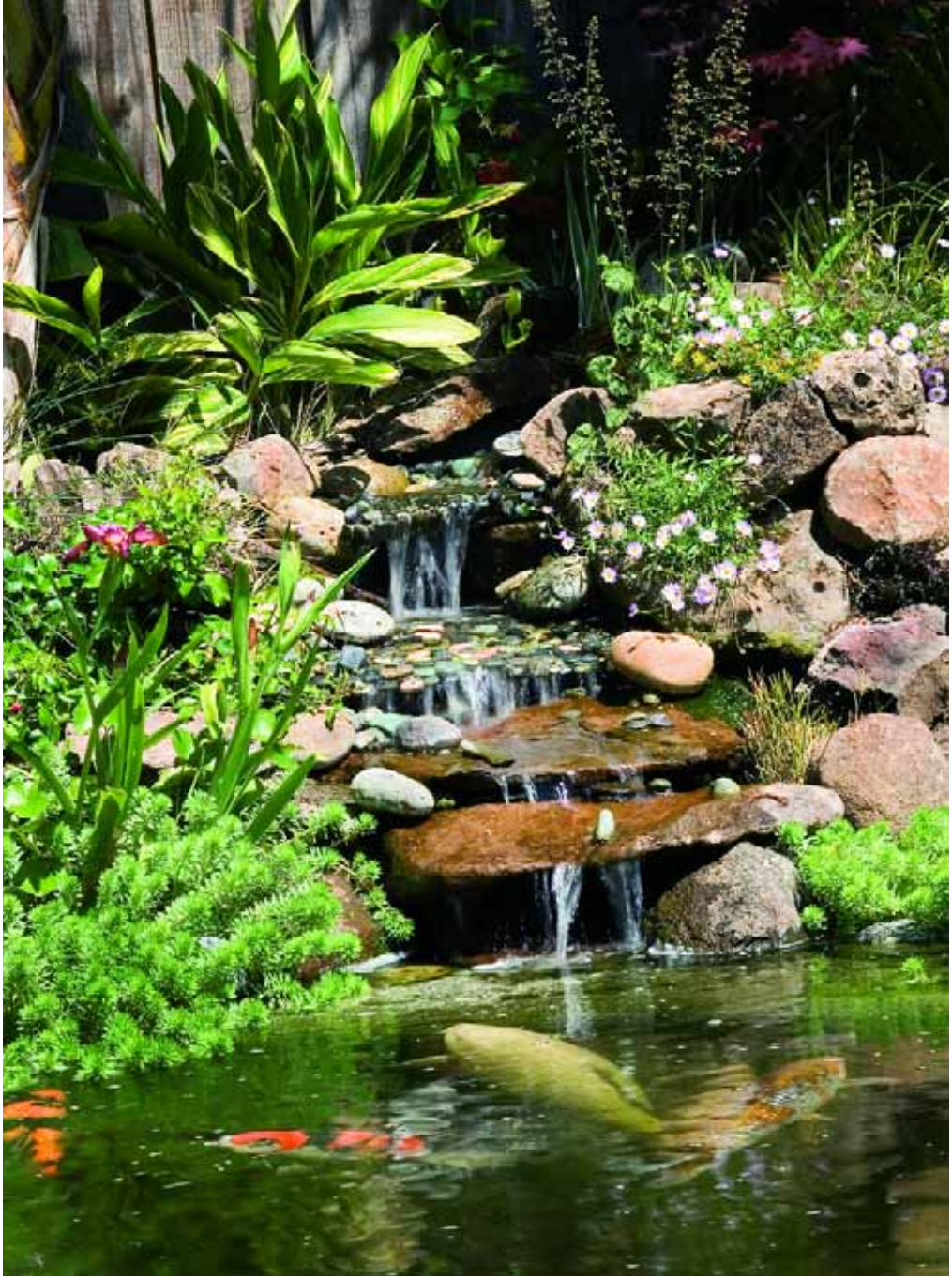
In fact and in a very real sense, you've already taken the most important of all steps toward creating habitats for a variety of animals simply by introducing water into your built spaces: Watershapes pull these scenes together – the water, its surface, its edges and the plant material and rocks that comprise its surroundings – just by being there.

Little Swimmers

Of all the creatures most closely associated with watershapes, certainly

Havens





fish occupy the top slots – with Koi being the kingpins when it comes to top-flight ponds.

Koi can indeed be dazzlingly beautiful and present the broadest imaginable spectrum of colors. They are also gregarious and seem to develop relationships with their keepers, who have often spent a great deal of money to obtain them and have also invested heavily in an environment dedicated to sustaining them properly.

With Koi (and other species) in our ponds, we must recognize that we have placed them in an artificial environment in which they are far more exposed and visible than they would be in a truly natural setting. We do so, of course, because not being able to see the fish would de-

Despite recommendations to the contrary, I'm a firm believer that plants should be part of watershapes occupied by Koi and other fish: Their roots host beneficial bacteria that clear away fish wastes; they contribute oxygen to the system; and they provide shade and protective cover for fish and other creatures we want to attract to the water's edge. (For all those reasons, I often use floating plant islands.)

feat the purpose of having them in the first place.

As with any artificial ecosystem, we're presented with the challenge of crafting an environment in which fish waste is managed and algae blooms are discouraged. Plants are the key: The soil that contains them and their root structures host colonies of beneficial, waste-consuming bacteria, and the plants themselves produce some or all of the oxygen the fish need to survive.

As the ecosystem develops, the soil and plant structures eventually become places for insects to breed, in turn providing the fish with a food source. As the plants mature and their roots become established, they also offer hiding places for fish and give them places to lay their eggs. In addition, all that plant material absorbs nitrogen introduced by fish waste, thereby improving water quality and fostering growth.

This all seems so wonderfully natural and balanced that I have difficulty understanding serious collectors who believe that plants should be kept out of water occupied by Koi. If establishing a healthy ecosystem is about striking natural balances, I just can't agree with that approach.

For one thing, plants are sources of oxygen. I typically place lilies, lotuses and emergent grasses on muddy edges or in planting pockets or on islands, using this greenery to beautify edge treatments and contrast with stone materials that intrude past and recede from the water's boundary. I don't rely on these plants to add all of the oxygen fish will require; rather, I see this as a supplement to waterfalls or aerators in maintaining an oxygen-rich environment.

For another, Koi really do need places to hide from predators. Depth is one way to protect them, and some installers set up stone grottos as safe havens – and that's fine as long as the recesses are large enough to host several fish. I've used both of those approaches, but I still see plants as another layer of protection and am also a big proponent of floating islands (such as Islandscapes by Freedom Ponds, Albuquerque N.M.), which serve the dual purpose of providing shelter for fish while offering areas where root systems deliver their full benefits to the ecosystem.

Turtles and frogs are among the most appealing of the creatures people want around their ponds and streams, but it can be tough to get them to feel at home. I do my best by including plants that draw the insects they like to eat as well as giving them some of the shelter they need to avoid predators. I also include secure hiding places under rocks or in grottos to give turtles in particular a place to go when the weather gets too chilly for them.

Amphibians at Work

Once you step past fish in thinking about wildlife, you get into much trickier areas because these other creatures are, obviously, far more mobile than our finny friends.

Take frogs as an example: I've found that it's incredibly difficult to keep them in a given space with much consistency and that no two of them respond in quite the same way when introduced to a space. In my area, for example, I've found that if I'm working in a neighborhood that has tree frogs (quite small but very vocal and fun to watch), they'll immediately take to a new watershape in good numbers – then will utterly vanish in a year or so, despite having seemed quite happy with the setting that whole time. Why this happens, I don't know.

But I keep trying to figure it out, because lots of my clients like frogs and find their croaking to be soothing or entertaining or the trigger of childhood memories. What I've learned is that frogs generally seek out moist areas around the water's edge – where the insects they like to eat are in good supply and the perimeter plants give them many places to hide.

Their fondness for insects, of course, can create conflicts with clients who like frogs but don't appreciate the prospect of having large quantities of insects hovering about. This is where communication comes in and I let my clients know that there's a trade off if attracting frogs is important to them. If they're willing, creating thickets of plants at water's edge and setting up bog areas will be great for frogs, insects and fish alike.

Bullfrogs are a bit different than tree frogs in that they tend to be territorial and have a homing instinct – meaning they naturally prefer to hang out where they were raised. Even so, I've found that about nine in ten of them will move along and that just one will settle in and make the garden a permanent home. (I also warn owners that it's likely these resident frogs will explore a bit

Dealing with Slitherers

For whatever reason, snakes tend to scare people. This is why you should know (and, of course, let your *clients* know) that, by creating animal-friendly spaces, slinky reptiles may well come to the party.

Personally, I don't mind snakes: They help keep down populations of rodents, which represent the single greatest threat to the environments I'm trying to create, and, despite what some people think, snakes really don't want to hang out with us, either. Even rattlesnakes are extremely shy and will avoid human contact if they can.

Yes, there are some areas where rattlesnakes can be hazardous to children and pets, but in those cases, local snake-abatement services might come and remove them. For the most part, however, snakes rarely pose much of a problem.

If it comes to pass that you *do* encounter a rattler on a patio, pathway or some other place where it's not welcome, do what was recommended to me by a local humane society: Just break out a garden hose and drive it away with water. I've had to do this on several occasions and am happy to report that the snakes always quickly take their leave.

– R.D.

and will likely find their ways indoors at some point. That possibility bothers some clients, but it actually seems to intrigue others.)

Turtles are another possibility and are quite similar to frogs with respect to their need for moist places and safety. But they also tend to be wanderers, with about one in every three or four staying on site. For those inclined to stay, keeping them happy is largely a matter of offering them a ready food source.

Also, turtles need and seek shelter in cold weather, so it's important to provide them with hiding places either outside the water or just beyond the water's edge where they can stay safely, often for months at a time. Raccoons and rats can be a problem when turtles are in this torpid state, so I make sure to provide them with secure spaces under rocks or even in hollow boulders.

For the most part, I don't introduce frogs into my clients' environments, instead doing what I can to set things up so they'll arrive on their own. I *will* introduce turtles, however, and often work with suppliers that specialize in turtles that have been abandoned by pet owners. (If you're looking for turtles in your area, many children's zoos provide rescue services or will know of agencies that do the same.)

Protective Measures

As mentioned in the accompanying text, when you create habitats for animals, it's likely that some predators will show up as well, looking for the same water and food sources you've set up to appeal to more desirable species.

This fact intimidates some clients, but I'm quick to let them know that, generally speaking, predators will not usually pose threats to people or the landscape. They *can* pose problems for dogs and cats, but for the most part, that's a matter of keeping your pets safe at night.

The most prolific predators I've encountered are raccoons, which have adapted themselves brilliantly to life in urban areas. They're crafty and resourceful and can be a delight to observe, especially when they approach water and meticulously wash their hands (for hunting rather than for any sense of hygiene).

Most of the time, raccoons will dig for grubs and other terrestrial insects and have an ability to make a mess of things. But the damage is more annoying than it is severe: I've found, for example, that they love hyacinths, will remove them from the water, take one bite out of the bulb and then discard the leftovers. My ready response: In areas with lots of raccoons, I don't use hyacinths for my ponds – despite the fact they are among the most effective of all filtering plants and will remove more types of waste and clear more water than anything else I know.

People also have lots of complaints about deer. Although they're not predators, they can make short work of a garden and have a particular fondness for roses and will consume every blossom in sight in rapid order.

Skunks can also be prolific but rarely pose much of a problem – with the obvious exception, of course. One substantial caution: If the environment is to include chickens or doves or other caged birds, skunks have been known to become the animal equivalent of mass murderers. They don't always eat the birds, but they'll sometimes slaughter them wholesale.

– R.D.

On Wing

Animals that fly are much simpler to accommodate than waterborne or land-loving species, but they can also be quite difficult to "manage." Insects, for example, are easy to attract and represent useful food sources for fish, frogs and birds alike. At the same time, they can become a huge nuisance if they overpopulate a given area.

Insects will gather wherever there's a preferred food source – typically decomposing organic material. What this usually means for watershape environments is the need to plant fruit trees that produce in sufficient quantity that the clients are unable to keep up by harvesting and using the fruit themselves. The excess falls to the ground, rots and attract insects.

Common sense comes into play here, and every setting is a bit different. The type of fruit tree you deploy, for example, will depend on what grows readily in a given climate zone and also happens to be something the clients like to eat. The number of trees can vary, too, depending on the size of the garden (a small backyard, for example, might need only one or two trees) and their output.

However it goes, you want to avoid an overabundance of falling fruit and rotting material because there's obviously such a thing as attracting too many insects. In addition, an overabundance increases the likelihood that the rotting fruit will also attract rats and raccoons.

Attracting birds and flying insects to watergardens is pretty simple: What they want most in life are food and water. For insects, flowers and fallen fruit are wonderfully attractive (if you don't go overboard). For birds, different types of feeders can be used to draw specific types (hummingbirds, for example, or songbirds). As for the water, birds prefer 'intimate' spaces where there are trees and shrubs around that offer them places to hide rather than large, open bodies of water.

Here again, communication with the clients and establishing reasonable expectations is the key: You simply can't sustain insects, turtles, frogs and fish without attracting rodents. There's no way to be that selective when it comes to ecosystems, and the best you can do is to strive for balance.

The same principles apply with birds: You can't attract the ones you want to see without also attracting some of their less presentable cousins. In this case, however, it's possible to manipulate the situation just a bit by using bird feeders.

Hummingbird feeders, for example, are quite popular, easy to maintain and work quite well in most areas, and there are other bird feeders that do a wonderful job of attracting blue jays, crows, robins and sparrows as well as small birds such as finches and various songbirds.

But where the food supply is important for birds, a good water supply is *crucial*: Birds don't generally gravitate toward open, still bodies of water in the middles of backyards, but a great many species seem to love shallow, moving streams and small fountains – especially when there are sheltering shrubs, trees or other plants nearby that will help them escape predators. Just as a matter of routine, birds like to move between the water and a perch in short intervals – and they also tend to take turns, which can be great fun to watch.

Through the years, I've had great success in designing spaces to attract birds. One was a pocket park in Walnut Creek, Calif., where previously crows had been just about the only visitors. With the trees, pond and various bird feeders we added, park visitors have seen great increases in the numbers and types of birds, including a variety of songbirds and other desirable species.

Revise and Revisit

Obviously, regions and even neighborhoods differ in the types of species they harbor. In addition, each of those species has its idiosyncrasies, meaning there are few hard, fast rules to go by in setting up environments to attract and sustain them. The one common point, however, is that successful settings feature water – both quiescent and moving – along with combinations of aquatic plants, safe havens, fruit trees and other food sources that appeal to certain desirable species.

In my experience, the outcomes turn on the available space, the client's desires and the encompassing environment. This means that striking the right balance generally takes site-specific experimentation and a willingness to revise plans (especially for plants) as things move along. Because of that, I'm careful to let my clients know that achieving their goal of creating places rich with animal life will take time, often a period of years.

As I move forward with projects of this sort, I find myself reaching out constantly to get the information I need. I've read books and studied biology on my own, but I've also spent a good bit of time consulting with specialists – suppliers of Koi and other wonderful fish, curators at zoos and anyone else I can link up with on the Internet who may have worthy advice to offer. I also encourage my clients to do the same, my aim being to make them active participants in shaping and editing the space.

These projects, in other words, have set me on a path that never ends. I'll never regret that the outcome of all my effort and exploration is a better understanding of nature and the way things interact within landscapes: It's a process that, with time, has enabled me to add "animal life" to the list of design elements I use – a list that already includes rocks, plants, watershapes and more.

Best of all, working with animal life yields delights that touch something deep inside the human character. Even if it happens only in small, momentary ways, the presence of animals inevitably creates closer connections to nature not just for our clients, but for us as well.

Malleable Permanence

Matt and Paul Doolin have spent their lifetimes exploring art and nature – pursuits of beauty reflected in their company, Topanga Art Tile & Design, which thrives by pushing ceramic tile to its artistic and practical potential. From colorful geometric patterns to hand-painted murals and textured, nature-inspired mosaics, the output defines a family business that has undertaken a journey marked by joy, hard work and great creative insight.

By **Matt Doolin & Paul Doolin**

It's often hard to tell exactly when you begin a career as an artist. As children, both of us loved to play with clay – but that's been true of countless other children the world over for untold generations. And it really *was* just fun for us, but now when we look back on those days, we also see that, even then, we'd started on the road to our current calling.

It helped, of course, that we were raised in a family of artists. Both of our parents drew and painted, and our father, James Doolin, was respected in the art world. But it was our mother, Leslie Doolin, who started it all for us professionally when she decided to paint on tile: Eventually we joined her in what was to become Topanga Art Tile & Design (Los Angeles).

As children, we attended scores of art exhibitions and openings with our parents and visited hundreds of galleries. We started out in New York, but when we were still quite young our parents left the city. After a few great years in Australia, we eventually moved to the bohemian enclave of Topanga Canyon, a hub of the Los Angeles art scene.

Given all that background, it's tempting to say there was a certain inevitability to art having an influence on who we would become. By the time we were in college, the die was cast, with one of us (Matt) pursuing an art-and-design degree with a focus on ceramics and the other (Paul) pursuing painting and illustration. It was in this period that we started awakening as artists and pushed our involvement with clay to the next level – both in sculpting and in making tile.

material flexibility

The appeal of working in ceramic tile as an artistic medium is vast.

First, it lasts. In a world characterized by disposability and planned obsolescence and at a time when so many artists trade in ephemeral products and materials, we've found that art-minded clients see tile as a "green solution" and like the thought of owning works that have the potential to exist for generations and even centuries.

Second, tile has kept up with the times. Indeed, although it is a medium root-

ed in the past, it also exists and assumes shapes in the here and now. All it takes is a look at the way the great 20th-Century Spanish architect Antoni Gaudi used tile in Barcelona's *Parque Güell*, for example, to know that it's possible to express yourself in ways that nobody ever has before. His inspiration, in fact, convinces us that ceramic tile has no creative boundaries whatsoever and has a significant, growing future in both practical and aesthetic terms.

Third, tile is extremely flexible. Although it's not that easy to work with, it's a medium that imposes very few practical limitations on what can be achieved. Flat in profile or textured with dramatic reliefs, sculptural or architectural, subdued or dramatic, it can be used to craft abstract images, geometric patterns or naturalistic representations of plants and animals as well as historical images.

Moreover, tile compositions can be very small and serve as no more than subtle accents, or they can cover vast surfaces and define entire spaces. They appear in utilitarian settings (such as bathrooms or kitchens), or they can dominate public plazas or highlight suburban backyards. The material is suited to all environments – and, best of all, works brilliantly with water in a harmony of artistic potential that brings novelty and excitement to any setting.

Its flexibility also makes tile accessible. To be sure, some tile is extremely elaborate and expensive, but it can also be quite affordable for a wide range of clients. To sum it up, ceramic tile is among the most protean of all artistic media, which leaves us who work with it the broadest possible range of opportunities when it comes to applications, project types, design styles and clientele.

On a more personal level, what we like most about tile is that the clay offers us wonderful freedom of illustration. Many of our designs are literally penciled into the surface, letting us work in almost limitless levels of detail. We can also make molds that allow us to replicate key looks, and those molds can come from just about anywhere, including illustrations we capture in vivid colors, varied depths and amazing textures. And when something isn't right, we can erase and reuse the material to try again – a wonderful combination of a forgiving medium that produces the most durable of end products.

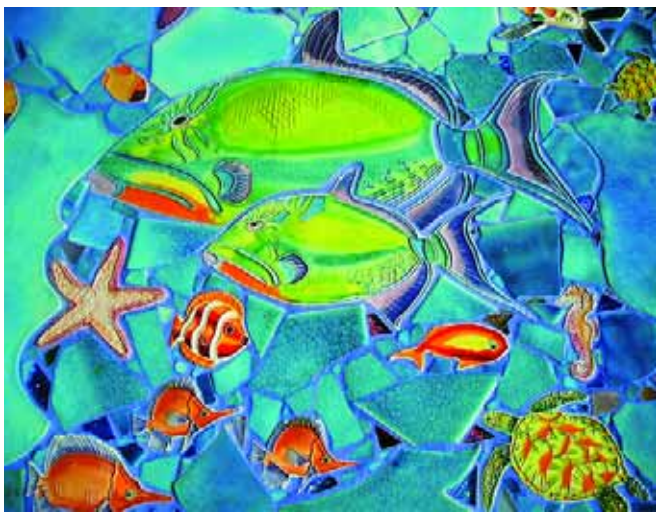
Indeed, tile resists wear and tear like no other material and won't oxidize like metal, wear away like wood or erode like stone: You basically have to take a hammer and chisel to it to destroy it, and even then the shards and pieces can be used in any number of ways. As such, tile holds its value through time – and that's something more and more of our clients seem to appreciate.

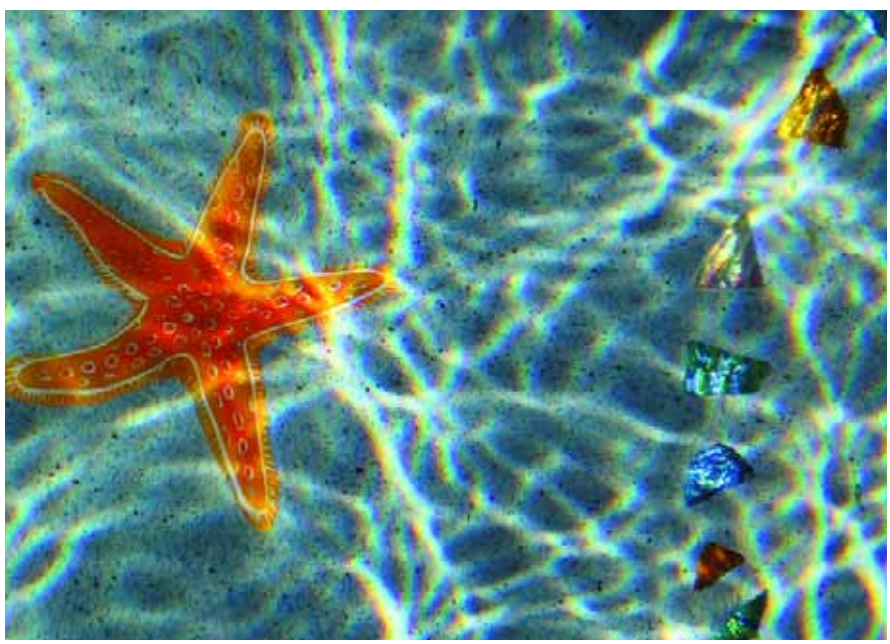
One other key phenomenon with ceramic art is that it's something many people have tried, whether at summer camp or in high school ceramics classes or as a serious hobby. What this accomplishes, we think, is making ceramics – and particularly ceramic tile – something people relate to immediately and strongly.

into the now

In our case, we started playing with the material at an early age and just stuck with it. We never lost interest because we kept finding and exploring new ways of working with the material and encompassing ever-expanding forms in

We come by our artistic sensibilities honestly: Our father, James Doolin, is an accomplished painter, while our mother, Leslie Doolin, was the first among us to work with tile as an artistic medium – as seen here in a shower mural done up in a prehistoric theme.





Tile has always been a natural medium for capturing aquatic themes, and we've done our part by offering glimpses of underwater life in our work. Along the way, however, we've portrayed some creatures not commonly seen in ceramic form, including octopi and leopard sharks.

which to make it available to our clients.

The business started in 1978 after a tremendous response to a shower mural our mother did as an art project in her garage studio. It was then that we realized we could make a living doing this kind of art. At first, we sold various conventional types of ceramic tile and worked in traditional designs, but even then, we knew we wanted to push the boundaries of creativity and blaze our own trails when it came to the variety of images we could provide.

Back in those days, however, the entire tile genre was far more limited with respect to what consumers wanted and what tile suppliers were willing to provide.

In the past 15 years or so, thank goodness, that situation has changed dramatically: We've seen a steady expansion of the spectrum of products in the marketplace and how creative consumers have become in their thinking about how various materials can be used.

What's always impressed us is our clients' willingness to combine materials in new ways, asking us to pair our tiles with stone, glass tile, plaster and concrete or even install freeform tile compositions on walls with our own painted mural backgrounds. We've also seen an explosion of interest in large-scale mosaics and tile patterns – daring, highly creative requests all made possible by aggressively open-minded consumers.

When we first started in the business, most of our tiles went into bathrooms or kitchens or ran in strips at the waterlines of pools. There were occasional murals and all-tile fountains here and there, but those were rare. Now, by contrast, we see elaborate ceramic tile compositions used as major architectural elements inside and outside homes and commercial properties. And we've really seen a boom in demand for tile with three-dimensional reliefs – to the point where sculptural objects actually seem to be growing and emerging from tile surfaces.

Through the years, we've responded

to consumers by developing our own approaches and styles and have created numerous projects marked by bold colors and dramatic imagery. We're also happy to say that we're not alone in our explorations; indeed, there are several other players in the field who are just as determined as we are to push the envelope and build a following for what they offer. We're all lucky to be active at a time when creative boundaries are constantly expanding and there are clients out there who apparently like what we're all doing.

Of course, the freewheeling nature of this marketplace has its challenges, leaving us to face the fundamental questions that haunt anyone who works at or near the leading edge: Given limitless possibilities, what do we pursue? How do we focus? What will keep us going into the future?

seeing the world

Happily for us, we've always been ready to pursue the answers to those questions. Through the years, we've delved extensively into a variety of motifs and subjects that reach far beyond the tiles that were most popular among our clients. In fact, we have been constantly restless, focusing a lot of our energy on bringing possibilities to our clients' attention that they probably never would have considered. For us, this is where much of the fun has always been.

Going back to our childhoods for a moment, all artists are products of their influences to one degree or another, and we're no exceptions.

Our mother is Australian, and when we were kids, we had the amazing privilege of snorkeling through the Great Barrier Reef. It was a mind-boggling experience: The fish, the coral, the aquatic plants, the weird sea creatures – all of it was overwhelming and has shaped our sense of what nature is all about. And there's *nothing* like being a child and swimming up to a clam large enough that you could climb inside, if you dared.

For us, this was a wonderful experience that eventually became valuable as well, because the notion of creating aquatic-themed murals and mosaics fit perfectly with the expansion of thinking about tile art in waterfeatures, particularly in the custom pool market.

In fact, the idea of representing elaborate underwater environments in pools and other bodies of water has caught on with many types of clients through the past two decades. Certainly, there's nothing new to the idea of placing images of fish, tur-

Tile's ability to convey vivid colors and tactile and dimensional texture has always been something we've exploited in our mosaics. It gives us the opportunity to present large images across sometimes broad areas while simultaneously allowing us to pay attention to tiny details that reward those who come near to take closer looks.

As far as we're concerned, the glory of tile is that it needn't be confined to conventional surfaces or planes – a lesson we learned in part from the great Antoni Gaudi. We often find ourselves tiling urns, for example, and have even more fun when we break out of two-dimensional representation and drape tile across surfaces in unexpectedly 'active' ways.

tles, shellfish or frogs in aquatic settings, but what *is* new is the attention now being paid to the quality of that imagery as well as the detailing, texture, color and realism.

We now devote countless hours to making these aquatic scenes and images as lively and real as the memories our well-travelled clients have carried away from coral reefs and tide pools. Along the way, we've found that the more realistic we get, the greater the response. And we also delight in creating permanent mosaic dioramas of underwater scenes that many clients may have never seen other than on television or in magazines, giving them immediate access in their daily lives to something few have ever seen in person.

We believe that these illusions work because they bring joy. The tile images add dimension, complexity and interest to otherwise conventional aquatic settings, and kids can't resist diving down to touch the fish and get a better look at the art. It's a whole new level of perception and a major new source of pleasure both above and below the waterline.

In other words, it's all just plain fun – and soothing as well.

And it's not just about the oceans, fish and coral: We also work extensively with floral and botanical images, birds and other animals – not to mention rainforests and other landscapes. We also create abstract patterns, geometric designs and historical images as well as architectural forms. All in all, we know that wherever these journeys take us, water is the steadiest of all common denominators. That's why, although not in the conventional sense, we've always thought of ourselves on some level as being watershapers.

give and take

As we've always seen it, the more we do, the broader our spectrum of options grows because ceramic tile can always be reproduced or altered to meet the needs of a new client and of any number of specific applications.

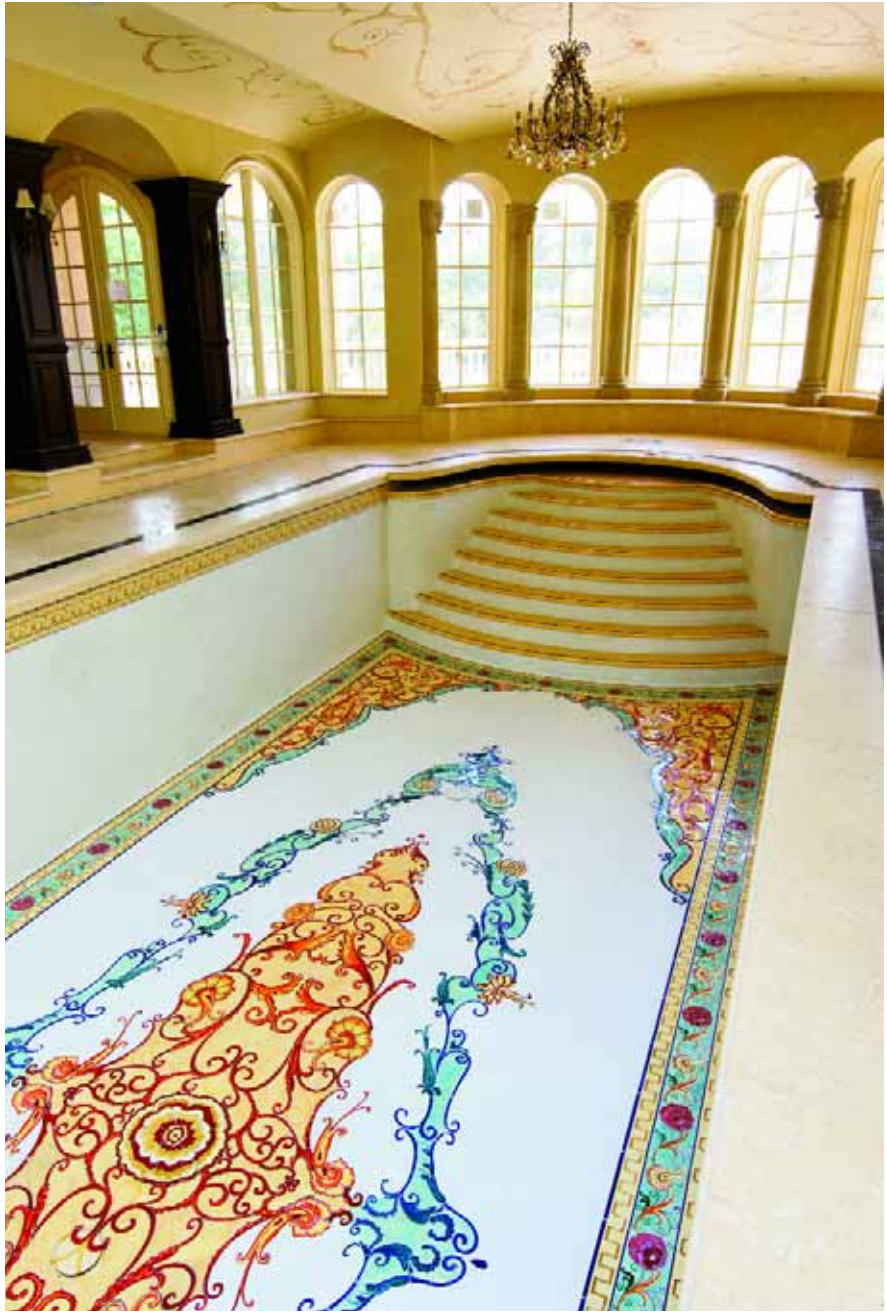
Obviously, we're engaged in running a business, so we're always tempering our own creative impulses with the needs of our clients. Some will want something they've seen installed, but often they will want a variation on an established theme – something that will make a composition distinctively *theirs*. Others will want something entirely original or unique. In all cases, we respond to their ideas and apply what we have done in the past (or develop as we move along) to meet their needs.

There can be a wonderful give and take as we light the creative fires, walk down paths either familiar or fresh and discover exactly what it is our clients desire. In some cases, the results might not be entirely to our tastes, but even these experiences are broadening for us as we move along trails we might not otherwise have followed.

All of this is amplified when we work in public or commercial contexts, basically because we usually end up working with committees and broad sets of ideas and expectations rather than with individuals. Despite such challenges, we enjoy these projects a great deal because they give us the chance to generate compositions that will be seen and used as destinations by people of all walks of life. These are the "galleries" in which we strive to be seen, and the people are patrons whose days we seek to enliven.

In other words, we know we've been fortunate through our careers to have come to a point where our creative expressions work on so many different levels in so many different settings. This work is inextricably bound up with the history of the ceramic arts and will survive us well into the future, and we see no limits in what we can do or in ideas we can explore.

Best of all (and as we frequently remind ourselves), this started when we were small children playing with clay. As it's grown as a medium, we've grown – and it's *still* fun, now more than ever.



For us (and, we trust, our clients), our work in ceramic tile is often about finding joy in illusions that surprise and delight, whether it's a chance encounter with a leopard shark or starfish while swimming – or entering a grand room and seeing a magic carpet at the bottom of a pool. If that's not fun, then what is?

Introducing
The WaterShapes Community

WaterShapes has launched a premium, members-only section of our Web site for watershaping's elite! By participating in The WaterShapes Community, you'll benefit from exclusive features and capabilities that will enhance your experience as a watershaper and contribute to your success. You will:

- Enjoy unlimited access to an **electronic archive** of our back issues, with an index to help you find what you're looking for.
- Have a lively forum where you can **express your views** on important issues facing the industry and learn what other watershapers think.
- Receive **discounts and special offers** from The WaterShapes Store and the magazine's advertisers.
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Salt

Between the soothing quality of the water they produce and the low-level maintenance these systems require, saltwater chlorine generators have rapidly risen to popularity in the treatment of swimming pools. But as Bob Harper of Pristiva points out, those benefits come with challenges and issues that watershape designers and builders should consider if the goal is to ensure system longevity and long-term client satisfaction.

By Bob Harper

In 2002, only 15 percent of new pools were installed with saltwater chlorine generators. Today, the percentage is much higher, with some industry analysts saying that upwards of two-thirds of all new pools are being built with chlorine generators. Those exact figures may be debatable, but the fact remains that there are now an estimated 1.3 million saltwater pools in the United States.

The reasons behind the boom are several, but consumers most consistently say they enjoy the soft, soothing feel of saltwater. They also appreciate the fact that it's easier on their eyes, nose and skin compared with traditionally sanitized pools – and that they don't have to store and handle hazardous chemicals, making maintenance both easier and more convenient.

For all of the well-deserved popularity of this technology, pool designers and builders need to know that the chemistry and equipment applied with saltwater pools pose a number of challenges for watershapes. These issues – from problems related to impurities in the salt to equipment scaling and damage to pool surfaces – can result in client complaints and callbacks that erode profits, sap energy from referrals and undermine faith in the technology.

A Balanced View

Our firm, Pristiva, was formed in 2008 as a subsidiary of Compass Minerals (Overland Park, Kansas) to provide products for saltwater pools. As mineral suppliers, we needed to understand the market, so we conducted more than 300 interviews with builders, retailers and service companies to explore all of the technical and business challenges that come with saltwater pools.

Solutions

We also commissioned a study on the quality and purity of pool salt available through major North American producers and ultimately used all of this information to develop a saltwater-pool care system designed to help builders complete the startup process quickly, easily and effectively. We've also done what we can to share this information within the industry, helping designers and builders understand these pools and profit from them, regardless of which system or salt they use.

As we explain to those looking for success in providing saltwater systems to their clients, the first step comes in understanding the ways in which saltwater pools differ from pools sanitized in more traditional ways – and in recognizing that those differences are greater than they appear at first glance.

With traditional pools, chlorine and other chemicals are regularly added to sanitize the water and control algae, staining and other potential problems. In saltwater pools, by contrast, chlorine is produced in a generator that converts salt to elemental chlorine through electrolysis. Pool owners simply add salt to maintain proper salinity levels throughout the swimming season, periodically dosing the water with other products to keep the water balanced. (The salt itself is only depleted through physical loss of the water itself, not through evaporation or the process of electrolysis.)

That sounds simple, but there are some complex chemistries at work, both within the harsh environment of the chlorine generator and within the pool itself.

Inside a chlorine generator, for example, the area of the cell experiences extreme pH ranges (up to 14 on the cathode and down to 1 on the anode) as well as extremely high chlorine levels (exceeding 50 parts per million) and temperatures above 120 degrees Fahrenheit. These nasty conditions can break down many conventional pool-treatment products as they pass through the generator, diminishing their ability to protect pool surfaces and equipment against staining, corrosion and other damage.

Another issue is the formation of scale on the chlorine generator's cell plates, which occurs because of the high pH levels accompanying the chlorine-production process. This problem can also be compounded by the fact that many products designed for use with traditional pools commonly contain ingredients such as sulfates and phosphorous-based sequestrants that tend to scale chlorine generators, thereby reducing chlorine output and shortening generator life. In fact, if things really go wrong with scale, a saltwater system can fail within a matter of weeks.

A third issue with saltwater systems comes during startup, when staining of the pool finish can occur. This happens because, as plaster cures during the first month, it creates a high pH at the water/plaster interface. High pH levels draw metal contaminants (some of which can be introduced with the salt) out of the water to stain or scale a pool's walls. The fix here is simple: All it takes is using high-purity salt, regular brushing of pool surfaces during the startup period and following the startup recommendations of the National Plasterers Council.

Not All the Same

To understand these issues, their causes and the solutions on a deeper level, it's important to know something about the salt that's placed in a pool to make a chlorine generator work.

In general, salt is added to fresh water in pools at levels of 3,000 to 4,000 parts per million, meaning a typical 20,000-gallon pool will require the addition of 530 pounds of salt at startup to reach a salt concentration of 3,200 parts per million. That's a lot of salt, obviously, and its quality affects the water in a number of ways because it contains a variety of contaminants (both organic and inorganic) depending on where and how it was processed. It is these contaminants that can be involved in causing the majority of problems seen with saltwater pools.

Given the fact that salt is added to pools in such large amounts, even small levels of contaminants can make a difference. For example, salts labeled as "99 percent salt" or "food grade" will add up to 5.3 pounds of impurities to a 20,000-gallon pool at startup. (As the name implies, "food grade" salt is good enough to eat in reasonable quantities, but it's less than ideal for pools in large quantities because of its contaminant load.)

Whatever the salt and however it is graded, the impurities are often attached to the lattice structure of the salt crystal itself and therefore cannot be totally removed, even by washing. As a result, a designer who specifies a system or a builder who installs it should take an interest in the salt that will activate the system. The consequences of the wrong choice can include shortened cell life, staining, scaling, higher chlorine demand and cloudy water.

Additives designed for use in traditional systems (some relabeled for use in saltwater pools without changing for-

mulations) can also cause significant problems in saltwater pools. In fact, many pool chemicals designed to prevent stains, scale and corrosion break down in the generator cell into compounds such as orthophosphates, which feed algae and contribute to scale formation; or sulfates, which cause scaling inside the generator. In other words, some of these products end up causing the problems they were meant to solve!

All of these treatment-related issues have relatively simple remedies: First, use high-quality salt with minimal contaminants in your watershapes; second, use additives designed specifically for saltwater applications.

Consider that saltwater in pools has one-tenth the salinity of ocean water and about half the salinity of human tears. Assuming that high-quality salt is used along with products designed specifically to withstand the conditions found in saltwater pools, this relatively low salinity level is not harmful to pool finishes and equipment – a possible exception being stainless steel.

Indeed, to avoid problems with surface pitting, manufacturers of chlorine generators generally recommend against using stainless steel components. That may be an overreaction: The fact is that stainless steel is a staple of shipbuilding worldwide, so it's apparent that better grades of steel are reasonably resistant to pitting resulting from exposure to seawater. Perhaps the best idea here is to consult with your suppliers' materials specialists when considering stainless steel around a saltwater pool.

As for the hardscape areas surrounding a saltwater pool, there's no doubt that splash-out can damage concrete or natural stone decking as well as other surrounding structures if they have not been properly treated. But damage can also occur *without* salt in the water: Water is the universal solvent and, given enough time, can dissolve just about anything.

As a consequence, stone, wood and other building materials need to be treated and sealed properly before use around any pool. After that, clients need to see to regular sealant recoating (per manufacturer instructions) and routinely hose off decks and other structures – especially in dry periods in areas where splashed-out water might collect.

Smooth Sailing

The key to saltwater system success, of course, is a smooth startup.

Quick, complete salt dissolution is important: The longer the newly added salt takes to dissolve, the greater the chance it has to do damage to pool finishes and equipment and cause etching, staining and even efflorescence. This is true in con-

While salt chlorination systems are largely hassle-free, designers and builders need to be aware of the effects salinity can have on equipment and a pool's interior surfaces – and consider what can happen when decking and hardscape details are splashed by the pool's water.

version of existing pools to saltwater systems, but it's particularly true with newly plastered pools: Their finishes are highly susceptible to staining and discoloration through the first 28 days.

As mentioned above, it always pays to follow the startup procedures recommended by the National Plasterers Council, including daily testing of pH, alkalinity and calcium hardness as well as daily brushing of pool surfaces during the curing process. For saltwater pools, however, there are some additional points to consider: Once salt is added, brush the pool surfaces until it has completely dissolved. And do not over-salt the water: Add just enough based on the volume of the pool to engage the chlorine generator.

Once initiated, saltwater pools require proper water balancing as well as regular maintenance and testing, just as is the case with traditionally sanitized pools. Our research shows that most consumers don't know what's involved in maintaining saltwater pools. Many think they can just "set it and forget it," but that's not the case. Indeed, all kinds of problems can arise when these pools aren't maintained and monitored properly.

As a watershaper, you need to educate your clients (or their service professionals) about the best ways to care for their pools. Proper instruction will minimize callbacks and complaints and protect your client's investment (and your reputation). Obviously, happy clients radiate positive word of mouth!

Here, in a nutshell, is what they need to know when you turn their saltwater pools over to them: First, they need to test and balance the pool water regularly. This means twice-weekly testing for pH and chlorine level and monthly testing during the season for total alkalinity, calcium hardness, stabilizer/cyanuric acid and metals (especially if they occur naturally in the water source).

Testing and adjusting for pH is obviously important, because the electrolytic process for making chlorine drives pH levels up continuously. Monthly testing of salinity levels is also a good idea: Many chlorine generators have built-in monitoring devices, but it can't hurt to back them up with a simple testing routine.

Finally, when they add products to the water, pool owners should look for those that have been designed specifically for saltwater pools. These products will perform better and will help protect against stains, scale, corrosion, turbidity, excessive chlorine demand and premature equipment failure.

Once these basic points are accommodated, the path is clear to years of satisfying enjoyment of the soothing pleasures of a saltwater pool.

From the Source

When we analyzed the salt offered by major North American suppliers, we found that every product included contaminants related to where and how the material was collected and processed. Some are good choices for use in pools; others are not.

For example, the so-called "solar salts," which are produced through the natural evaporation of saline ponds by sun and wind, are less than ideal: They can contain a host of organics that may result in cloudy water and increased chlorine demand. They may also contain inorganic contaminants (such as metals) that can cause staining and scale formation.

By contrast, "food-grade salts" are produced by mechanical evaporation and are relatively free of organic waste. Nonetheless, they can contain a variety of inorganic contaminates (depending on the geographical source) ranging from manganese, copper, iron, nitrates and phosphates to silicates, sulfates, calcium and heavy metals. The presence of these contaminants can affect water clarity, the salt's dissolution rate, water balance and the stain/scale potential of the water.

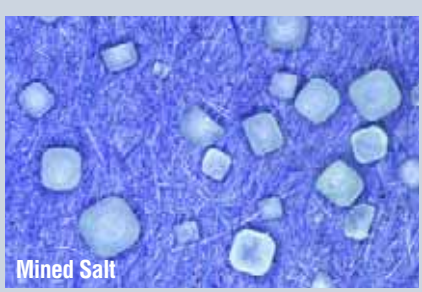
A third option, "rock salt," is unrefined, mined material and can have significantly greater levels of inorganic contamination than mechanically evaporated salt, along with dirt and other insoluble matter. This material is used primarily for road de-icing and water softening and should not be used in pools.

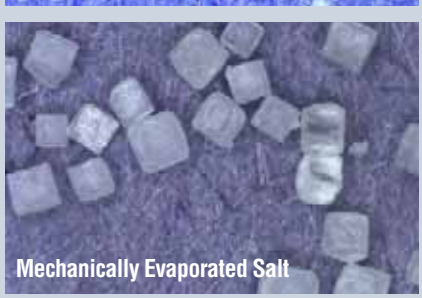
But you can't always rely on these basic classifications in settling on a product: At Pristiva (Overland Park, Kansas), for example, we use only high-quality salt made using mechanical evaporation at our facilities in Nova Scotia – a material unique in its level of purity and its fast-dissolving crystalline structure.

Bottom line: Before you add *any* salt product to a swimming pool, be sure you know what kind of salt it is, where it comes from and whether it is appropriate for use in saltwater pools.

– B.H.


Solar Salt


Mined Salt


Mechanically Evaporated Salt

One for the Sun

The beautiful pool complex seen here is among his crowning achievements, notes watershaper Randy Beard, representing something of a harmonic convergence among great clients, amazing architecture, a beautiful setting and top-notch design and construction teams – all gathered on a challenging hillside lot. The outcome, he says, is a deceptively simple watershape tucked neatly into a sublime environment.

By Randy Beard

Sometimes watershaping is so much fun that it seems less like a job than a labor of love.

That was absolutely the case with the watershape pictured here: I was given free rein to do exactly what I thought was needed in collaboration with great clients and a wonderful project team on a spectacular property. And as if that wasn't good enough, we ran into virtually no problems along the way, even though we were working in a city sometimes known for setting obstacles in the way of ambitious designs.

We at Pure Water Pools (Costa Mesa, Calif.) get involved in numerous custom projects every year, and the work just seems to get more creative, interesting and satisfying as we move along. I'm not willing to say we've peaked by any stretch of the imagination, but it feels good to think that this may well be our best work to date – and at the very least is worthy of being considered as such.

The objective, as is often the case in great projects, was quite straightforward: We were to create a swimming pool worthy of the beautiful setting and the home's wonderful architecture while keeping things as clean and simple as possible. If I do say so myself, I think we hit all of those notes in perfect harmony.

Spirit of the City

First, let's consider the location. This property sits atop a hillside in Laguna Beach, Calif., overlooking the city as well as whitewater views of the ocean. The homes all around are quite elegant, most of them in distinctly Contemporary styles.

The city itself is truly one of a kind – an upscale seaside resort that boasts more than 200 art galleries and is home to multiple arts festivals throughout the year. Everywhere you turn, you're confronted by art, water, great shopping, fine restaurants and large quantities of people living the good life.

My wife Martha and I live down the road in Costa Mesa and have long considered Laguna Beach to be one of our favorite places to be. Numerous well-known architects have lived and worked in this special place, and driving in the hills is akin to taking an unguided tour of the very best in modern residential architecture.

The clients are as interesting as the place they chose to build their dream home. They live most of the year in a stately, historic edifice in Frankfurt, Germany. Although they love the place, they've long been frustrated by the fact that local building codes won't let them express themselves as they would if given the opportunity.

I first met them about 11 years ago, after they'd purchased a place up the coast a ways in Newport Beach with the

Everything about this project fell right into place from the start. From the staggeringly beautiful setting and wonderful access that allowed us to get drilling rigs onto the site with ease to the entire process of installing the piles and grade beams to support the pool, it was about as close to 'simple' as a project of this scope and complexity can be.

thought in mind that they could finally get creative. They had no idea in acquiring the property that Newport Beach had rules almost as restrictive as the set they were trying to escape: Although we built a beautiful, highly customized pool for them, it was clear that they were frustrated that they couldn't make their new home be the personal expression they dreamed it would be.

Jumping ahead several years, they purchased five acres of prime real estate in Laguna Beach – one of the largest lots in the city. The house had been designed by Fred Briggs, an architect and local legend who passed away a few years ago. His legacy can be seen all over the city not only in projects he pursued, but also in the ones he inspired.

The architecture of my clients' home might best be called Contemporary, but it's mainly just *unique* – a Minimalist approach that's both modern and rustic at the same time and uses weathered materials from rusted I-beams to reclaimed wood siding and tarnished metal roofing. The key for us was that the home also makes extensive use of a distinctive quartzite stone that blends beautifully with the surrounding chaparral landscape.

Making further use of the large parcel, the owners are currently engaged in developing another home on the site in collaboration with another well-known local architect, Anders Laster, who is following the pattern established in the main house by Briggs.

Labor of Love

We entered the picture about a year ago, having been told we had *carte blanche* in creating a watershape to befit the setting.

While Laguna Beach isn't quite as intrusive when it comes to construction projects as either Newport Beach or Frankfurt, we knew from local reports and experience that building here can often be a rough-and-tumble proposition. The real estate is so valuable and the environment so precious that almost any square foot of land can become the subject of dispute.

Indeed, neighbors often contest building plans, and there have been situations in which projects have stalled for years (or been abandoned completely) as a result of disputes.

This was not the case here: Both the architect's firm and mine are well established in the area and well known to building officials, and we knew that if we moved forward with confidence, precision and speed, we were unlikely to encounter any serious obstacles.

More important still, the clients had complete confidence in the design/construction team, so even though they were enthusiastically involved in the entire design process, they let us do what we thought best every step of the way, always with their approval. To sustain that trust, we communicated with the clients almost daily via e-mail, sending along a constant stream of three-dimensional computer renderings that helped them visualize various spaces.

What emerged was a project of great technical complexity but graceful visual simplicity. At first glance, for example, the pool appears to be a rectangle, but it's actually a trapezoid with no right angles – a configuration we picked up to echo the balconies that overhang the pool area.

The pool itself rises above grade by 20 inches and overflows across its entire perimeter. Monolithic in appearance, two of its sides work as classic vanishing edges, while the other two flow down into narrow deck-level slots. We chose this configuration for two reasons: First, the raised profile gave the watershape a distinctly sculptural appearance that harmonized with the home's bold architecture. Second, raising the pool enabled us to use the vanishing edges on the pool's far side to direct viewers' eyes to the city below and to sweeping ocean views beyond.

On the deck side, the water flows over the edge and drops down to an almost-imperceptible slot leading to a gutter completely concealed by the deck material. On the other side, the water flows over

The watershape has a rectangular appearance, but it's actually a trapezoid that made us take special care in setting the forms and getting every angle just right. But again, everything went smoothly through all of the preparatory stages, including the process of bringing all the plumbing runs together for a crowded approach to the equipment room.

All of the stone and tile materials were carefully selected to make the pool, deck and walls harmonize visually with the property's hillside surroundings and the chaparral-type native landscape that flows up and down the coastal canyons of this part of California.

the vanishing edge and into a catch basin that wraps around the two outer edges of the pool. Here, the water flows in such a way that it creates a waterfall effect that fills the space with the soothing sound of falling water.

(Speaking of "falling water," I borrowed liberally from the swimming pool Frank Lloyd Wright designed at Fallingwater in the 1930s – particularly with respect to the lateral step treatment seen inside the pool.)

Inside Design

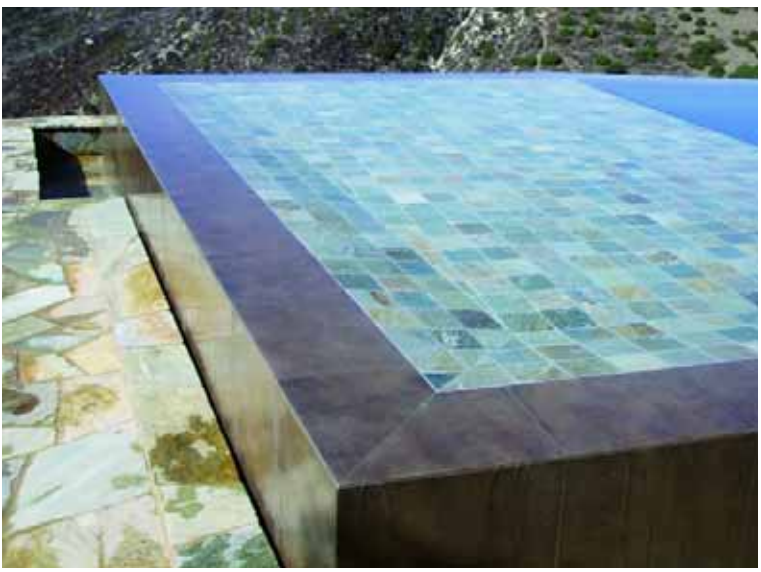
Beyond the pool's basic trapezoidal configuration, we used its finishes to tie it together with the surroundings.

The pool's edges and raised walls, for example, are finished in a simple, chocolate-brown ceramic tile – a choice we made to complement the rusted I-beams and weathered wood siding. In addition, the tile presents a durable, easy-to-clean surface that withstands the broad temperature variations occurring when the edge system turns on and off.

For their part, the deck and edge walls are finished in the same quartzite used on the lower walls of the house. We were aware, of course, of how dramatically different this material looks when wet compared to dry – and of the fact that the house and the faces of the pool's vanishing edges and trough system are clearly visible from the city below. Even at a distance, the stone and tile make a wonderfully harmonious statement against the backdrop of the surrounding natural landscape.

Back on top of the hill, the interior of the pool is finished in a material from Beadcrete (Glendale, Ariz.) that has the look of a pebbled surface but is smooth to the touch. The chosen color – a dark blue/gray – was selected to mirror the appearance of the ocean and was installed by Alan Smith Pool Plastering of Orange, Calif.

The pool and the surrounding deck area are supported by a complex system of piles and grade beams. Given the challenging geology and the fact that the hill-



As a safety measure, we played a bit with the configuration of the overflow system at the end of the pool where we placed the shallow lounging area. Here, the vanishing-edge trough is just below deck level; where the thermal ledge breaks, the pool deepens and so does the trough – with such a substantial drop that it adds the sound of a waterfall to the space.

tops are gradually migrating downhill toward the ocean, the home and poolscape are essentially freestanding on a massive substructure. The architect handled the engineering and structural design for us, and construction was made easy by wonderful access and our ability to bring in two big auger rigs. Again, although this process was enormously difficult by any standard, all went forward smoothly and seamlessly.

As suggested above, the home is used only a couple of months during the year, generally through the summer months. Both of the clients are regular swimmers and love lounging and playing in the water with their grandchildren – meaning the 70-foot-long, 18-foot-wide pool not only had to be beautiful, but also fully functional.

To the right side of the pool (as you face the ocean) is a 12-by-12-foot spa that is basically indiscernible from the rest of the

In all of its rustic charm, the home now seems to float on its stone base and is, in fact, in plain view from the city below, which drove us to make every visual detail work to perfection.

pool. The large size was dictated by the fact that both of the clients are quite tall and wanted to be able to stretch out as well as accommodate multiple bathers. The spa is adjacent to the pool's eight-foot deep end – unusually deep these days, but the clients wanted it that way.

On the other end of the pool, we established an echoing 12-by-12-foot thermal shelf as both a lounging area and as a shallow play area for children. The shelf is topped with quartzite – another means of tying everything together visually. We battered the inside edge of the lounging area to create an easy vi ual transition to the overflow slots while also making the shelf more comfortable for reclining.

Super Sized

We all agree that the pool is large for its space, but that, too, was a deliberate decision: As mentioned above, the clients are currently in the design phase of creating an adjacent house that will be connected to the pool area via a bridge, so everything was scaled with that expanded purpose and access in mind.

The equipment required to run the watershapes is located in a dedicated room on the home's lower floor. The set is appropriately simple and direct, with pumps and diatomaceous-earth filters from Pentair Water Pool & Spa (Sanford, N.C.) and a saltwater chlorination system fom Goldline Controls (North Kingston, R.I.) equipped with an automatic muriatic acid feeder.

As artistic and upscale as this project is, the whole composition is remarkably simple and the entire process of putting it all in place was a model of smooth precision. At no point did significant problems arise; the city left us to our business; change orders were a non-factor; and the clients loved what they saw emerging almost as much as they love the results.

Projects such as this are never truly easy, but this one at least *seemed* to be, every step of the way: great clients, a great team and a spectacular setting, all in an environment that encouraged complete creative freedom. As we see it, watershaping just doesn't get any better than this!

Spectacular at all times, day and night, the watershape takes on a special visual energy when there's color in the sky that makes the surface glow as an amazing mirror to the home's flawless surroundings.

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In the Spotlight

For live links to the companies featured here, go to **www.watershapes.com/spotlight**

Garden Fountains

AQUA BELLA DESIGNS (Harpers Ferry, WV) has published literature on its line of garden fountains. The 28-page, full-color brochure covers fountain vases; fountain rocks, millstones and basalt columns; and fountain orbs. There's also a portfolio of installed projects designed to serve as an idea book as well as information on the AquaBox Fountain Kit and a range of accessories

Fire Pit Systems

ABBY ROCK (Fort Wayne, IN) introduces Warming Trends to simulate the natural beauty of a real wood fire. Available as complete kits with rock surrounds and mantels or as a burner insert and logs only, all systems come standard with wireless remote ignition and are compatible with pool-automation systems. The burner inserts come with diameters of 24, 30 and 36 inches – or in custom configurations.

Iridescent Glass Tile

LIGHTSTREAMS GLASS TILE (Mountain View, CA) has introduced the Gold Iridescent Collection of glass field tiles. Designed to reflect a narrow spectrum of colors, the line's shimmering golds, silvers and magentas are made to work with earth-tone palettes. The tiles are soft to the touch with smooth edges, and they're also reversible, with a smooth, shiny face as well as a textured, iridescent side.

Perimeter-Suction Drain Cover

NEPTUNE-BENSON (Coventry, RI) has introduced the Aegis Anti-Entrapment Shield. Designed with 100-percent perimeter suction in compliance with the Virginia Graeme Baker Act, the 30-by-30-inch, solid-fiberglass unit retrofits over any existing main drain up to 24 by 24 inches, requires no grounding to the pool and is completely resistant to the elements. All mounting hardware is included.

Lighting Guide

HADCO (Littlestown, PA) has published an installation guide for its low-voltage landscape lighting systems. The 60-page booklet covers the benefits of lighting, then gets into design issues and project planning before discussing installation of a full range of systems, from mounting the transformer and hiding cables to placing fixtures for underwater, tree-mounted, inground and other applications.

Custom Step System

CARDINAL SYSTEMS (Schuylkill Haven, PA) has introduced a new system to its Caravelle line of polymer-wall pools that allows builders the option of creating steps of any desired size or shape. Using a unique parabolic design for stability and strength, the materials used for the new step sections can be designed to any configuration and are tooled with precision parts for easy installation.

In the Spotlight

For live links to the companies featured here, go to **www.watershapes.com/spotlight**

Walk-Behind Trenchers

DITCH WITCH (Perry, OK) has introduced two walk-behind trenchers, the RT10 and the RT12. Designed primarily for short runs and operated by easy-to-use controls, both devices feature fully hydrostatic steering and offer a choice of high-flotation tires or heavy-duty oscillating tracks. The RT10 operates with 11 horsepower for smaller jobs; the RT12 operates with 16 horsepower for larger ones.

Construction-Management Software

EVOSUS (Vancouver, WA) has added a job-costing component to its Business Management Software. Designed specifically for the pool and spa industry, the new function offers builders assistance in managing large jobs, including remodels and new construction. Specific features include job phases, cost codes, progress billing, employee time tracking, materials management and a host of job-costing reports.

Indoor Wave Ride

WHITEWATER WEST INDUSTRIES (Richmond, British Columbia, Canada) has introduced the FlowRider for waterparks and aquatic centers. The indoor surfing-wave system generates a thin sheet of water that flows over a stationary wave form. The resulting wave-like shape allows riders with either beginning or advanced skill levels to slide down the face, carve out a turn and ride back up the wave surface.

Rebar Tool

FRANK WALL ENTERPRISES (Columbus, MS) offers MAX RB-395, a lightweight tool that speeds the tying of rebar on pool construction projects. The device gets the job done about five times faster than manual tying, providing ties of consistent strength and quality in under a second with the pull of a trigger. It is also available with an optional extension bar to reduce the risk of back injuries.

Modular Lighting Fixtures

ORBIT/EVERGREEN (Los Angeles, CA) offers its low-voltage B180 solid-brass pathlights with six optional shade styles to allow for coordination of fixture looks with a landscape or architectural design. The line includes fluted shades with cut-out patterns; shades with hammered detailing; and geometric or pagoda options in three finishes: antique brass, antique bronze or architectural bronze.

Compact Pond Filters

DANNER MANUFACTURING (Islandia, NY) has introduced the Pondmaster Compact Pressurized Filter System. Designed for economy in small ponds or patio containers, the devices may be installed with new or existing waterfeatures and come in five models that accommodate pumps rated at up to 1,800 gallons per minute. All models (with one exception) are available with optional ultraviolet clarifiers.

In-Pool Bench

QUAKER PLASTIC CORP. (Mountville, PA) has introduced Leisure Bench. Designed to allow bathers in vinyl-liner pools to relax in comfort, the eight-foot unit mounts directly into the pool wall system (replacing a standard wall panel) and features a 14-inch-deep seat. It also includes a bench support and wall-brace assembly, and there are three insets to allow for insertion of hydrotherapy jets.

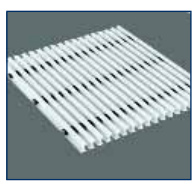
Backwash Controller

PENTAIR WATER COMMERCIAL POOL & AQUATICS (Sanford, NC) has introduced a controller that simplifies the backwash cycling of filtration systems equipped with diaphragm-style backwash valves. The programmable, semi-automatic device can manage up to six filters in sequence using a multi-port pressure-distribution valve that actuates backwash valves with water or air pressure.

Commercial-Grade Fencing

EVOLUTION FENCE CO. (Hauppauge, NY) has added commercial fencing to its line of ornamental, powder-coated aluminum fences. Designed for beauty and durability, the system features 45-degree-turned, one-inch pickets and one-by-two-inch commercial-grade rails. There are no exposed fasteners on panels or posts, and the fences are available in five- and six-foot versions in standard mortise systems.

Drain Grates



McNICHOLS CO. (Tampa, FL) offers I-4010 and I-4015 fiberglass drain grates that meet federal safety standards. Designed for applications in waterparks, lazy rivers and large pools in commercial, school and public facilities, the products require no electrical bonding; can be custom-cut to fit unique drain shapes and sizes; have 40-percent open area; and are held in place using stainless steel fasteners.

Book Notes

Revealing Our Past

By Mike Farley

As someone who has spent years digging into the history of landscape and watershape design, it comes as something of a surprise to me that, alongside the luminaries who dominate discussions of the origins of familiar design approaches, motifs and styles, stands at least one practitioner who is not nearly as well known as he should be.

That man is the subject of R. Terry Schnadelbach's *Ferruccio Vitale: Landscape Architect of the Country Place Era* (Princeton Architectural Press, 2001). I had never heard of Vitale, which, after reading this fascinating 320-page account of his life and work, truly startled me. I studied landscape architecture in college and have been an avid reader of books on a wide range of design-oriented subjects ever since, and it actually *bothers* me that this is my first contact with such a great landscape artist.

As Schnadelbach explains, you need to delve deep to pull up Vitale's name. He worked early in the 20th Century in the "second generation" of landscape architects who succeeded eminences including Frederick Law Olmstead.

Through those years, the most prominent (and still celebrated) American designers pursued distinctly naturalistic designs in response to the formalism that defined European garden traditions. Vitale, by contrast, was an advocate of more structured forms and plied his trade mostly on Long Island (and then elsewhere) for an array of wealthy residential clients.

According to Schnadelbach, Vitale never sought publicity and tended to work in collaboration with architects who took the lion's share of the attention and most of the credit. But he was no slouch, designing the gardens adjacent to the Washington Monument (one of his few public works) as well as the fountains at Longwood Gardens, where he collaborated with Pierre DuPont. It also bears mentioning that Vitale was one of the 11 founding members of the American Society of Landscape Architects.

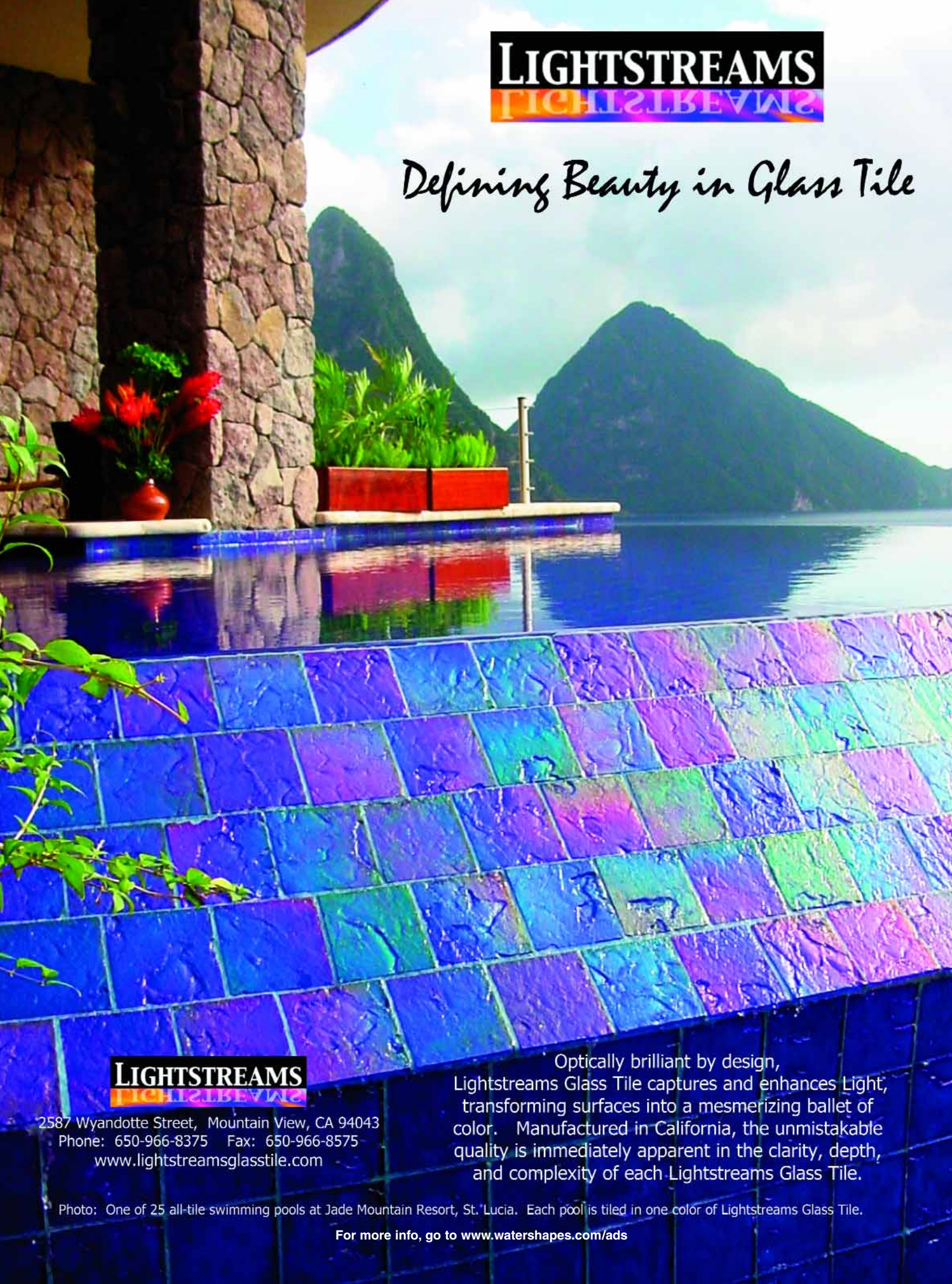
Not only was he one of the first designers to focus substantially on residential work, but he also broke new ground by breaking down the barriers between designers and installers and, in doing so, defining that professional option for generations to come. He founded numerous firms and brought in constant streams of other designers as colleagues and partners.

Most amazing of all to me, Vitale was the one who originated the practice of digging up mature trees and wrapping their root balls in burlap – a means by which, he said, he could create "instant" gardens populated by mature trees and various other full-sized plant materials. Finally, and perhaps most significant to readers of this magazine, Vitale is credited as the very first landscape architect in America to incorporate swimming pools and tennis courts in his designs.

Unhappily, the vast majority of Vitale's works (dated mostly to a span from 1910 to 1935) have been altered beyond recognition or simply no longer exist. Indeed, the pages of Schnadelbach's thoroughly researched book stand as the primary record of his multiple achievements. He comes through as a bit of a renegade, with a body of work that reveals a restless, tirelessly creative spirit and engine of compelling design ideas.

In many respects, he was a man well ahead of his time and, as a source of inspiration, strikes me as being second to none. Here's hoping this book helps elevate this remarkable man's reputation and earns him his rightful place as a pioneer of landscape architecture and as one of our most cherished historical influences. WS

Mike Farley is a landscape architect with more than 20 years of experience and is currently a designer/project manager for Claffey Pools in Southlake, 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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