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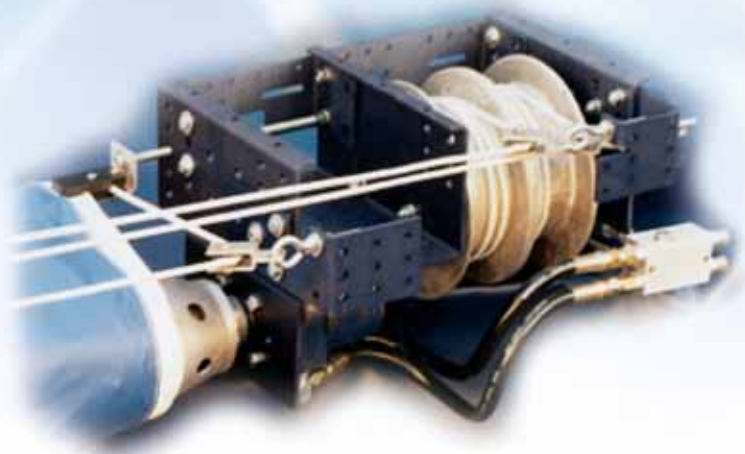
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Photo by Charles Schmidt, courtesy Hydro Dramatics, St. Louis

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## A New Image

One of the themes we touch upon frequently in the pages of *WaterShapes* centers on the concept that an industry once thought to be the exclusive realm of fast-talking, quick-drawing operators with questionable products has been experiencing a brisk, revolutionary shift toward quality in design, engineering and construction.

There may still be some out there who have yet to internalize that message, but when it comes to truly custom watershaping, I feel comfortable in saying that the industry's output is truly becoming an art form. As an interested observer of this process, I must say that watching this revolution has been exciting and gratifying and that it has been a pleasure to support it in print.

One of the issues to be considered in the context of this ever-rising tide is that some industry segments that have been making steady progress are still saddled with the image of being stuck in the past and haven't received as much credit as they deserve. As a specific example, for as long as many of us in the watershaping industry can remember, vinyl-liner swimming pools have been considered a lesser product than their custom-concrete counterparts – and for good reason.

I'm happy to report, however, that my eyes have been opened in recent months to dramatic changes in that sector in particular: Improvements in the approaches of liner and structure manufacturers have resulted in a new breed of vinyl-liner pools that gives them a legitimate place at the custom/thoughtful-design table.

This being a New Year with the usual focus on new beginnings and resolutions, the time seems ripe to shine a light on this revitalized corner of the watershaping industry: To that end, you'll find in this issue one of only a handful of articles we've ever published about vinyl-liner pools – an interesting feature if ever I've seen one.

Called "Vinyl Lines," it's by Michael Truehart and starts on page 58. Truehart is a builder who has been involved in vinyl construction for nearly three decades and has seen his chosen medium go from off-the-shelf, packaged-goods status to a point where he can now make pools in virtually any shape, size or color scheme – a flexibility that has freed him to focus on larger, fully designed projects that include tasteful amenities, attached spas, grottos, elaborate hardscape, naturalistic surroundings and/or associated waterfeatures.

As he reports in this compelling story of product revolution, this new, custom class of vinyl-liner pools has reached a point where high-end clients and their equally high-end designers are taking notice.

I'll confess that until I worked with Truehart on this story, I had always been among those who labored under the old idea that vinyl would never be more than a *compromise* when it came to building pools and spas. Whether or not liners will scale the heights that we've seen in vinyl-lined ponds and streams or gunite pools and spas is yet to be determined, but it's clear from Truehart's case alone that the aspirations are there and, just as important, are finding an interested clientele.

*Eric Herman*

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**Kerry Friedman** is vice president and general manager for Hydro Dramatics, a St. Louis-based fountain consulting and design firm and a division of Missouri Machinery & Engineering Co. A veteran of the water-pumping and hydraulics industries since 1971, Friedman has applied his expertise to a vast number of projects nationwide and across the globe, including the company's work on the East St. Louis Riverfront fountain, known as the world's tallest vertical jet system. He has also been involved in leading roles on a range of similarly ambitious projects, including Plaza Minillas in San Juan, P.R.; Weil University in


Doha, Qatar; and the U.S. Embassy in Moscow.

**Rodger Gariano** is president and founder of Vita Nova, a Van Nuys, Calif.-based designer and manufacturer of custom tile mosaics. After first getting involved in the mosaic business in 1984, he founded Vita Nova in 1991 and has since worked to bring the "lost art" of tile-based illustration to contemporary designers, architects, watershapers and landscape architects in the United States and abroad. Gariano studied art and architecture at the University of California at San Diego and at the Academy of Art in Venice, Italy.

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*Interested in writing for WaterShapes on design, engineering or construction topics? Contact Eric Herman at (949) 494-4533!*

**Michael Truehart** is owner and founder of Northport, N.Y.-based True Blue Pools, a firm focused entirely on the design and installation of high-end, custom vinyl-liner swimming pools and spas. He began his career in high school, working part-time as a pool installer. Following undergraduate work in economics at Suffolk Community College and Albany State University, he focused on the swimming pool and spa industry and has been part of it ever since, pursuing projects throughout the state. His firm specializes in executing high-end construction processes in ways that are unobtrusive and even pleasant for its clients.

**Brian Van Bower** operates Aquatic Consultants in Miami and is a co-founder of the Genesis 3 Design Group. With more than 35 years' experience in the swimming pool and spa industry, he now specializes in the design of swimming pools, recreational areas and hydrotherapy clinics. As a consultant, he also conducts training and inspections and serves as an expert witness in insurance investigations. From his start with pools in 1967, he's been a pool manager, service technician and contractor, operating Van Bower Pool, Patio & Spas from 1971 until 1991. He began consulting in 1989 and co-founded Van Bower & Wiren in



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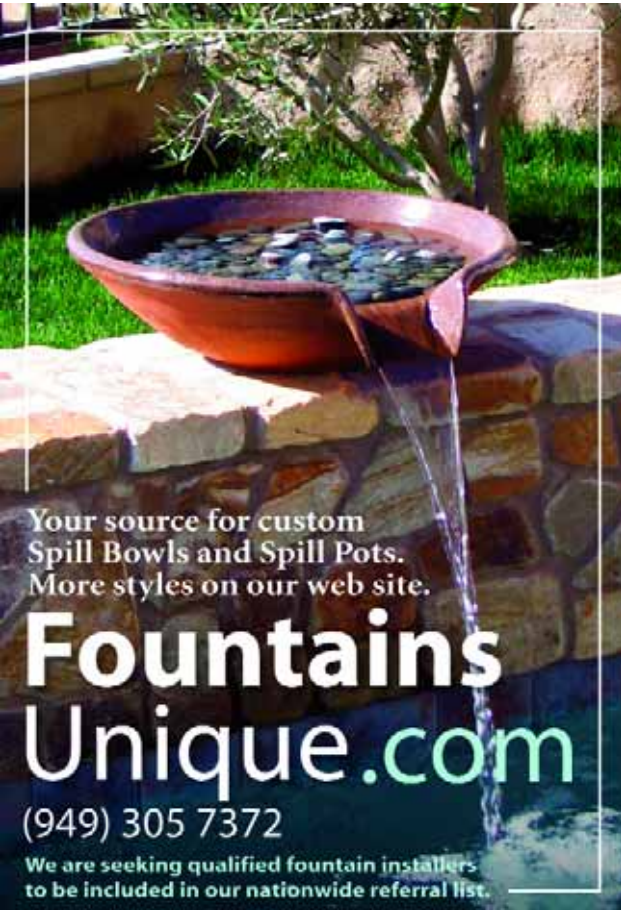
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1995 to specialize in high-end pool-construction projects. He's been active in trade associations throughout his career at the local, regional and national levels, has won numerous design awards and has been inducted into the Swimming Pool Hall of Fame.

**Stephanie Rose** runs Stephanie Rose Landscape Design in Encino, Calif., and also serves as editor of *LandShapes*. Once a New York securities analyst, she gave up Wall Street more than 16 years ago to pursue a career in landscape design – and has never looked back. Her firm specializes in residential gardens for upscale clients in the Los Angeles area, where the lengthy planting season and mild climate provide tremendous creative freedom and year-round work. Her projects frequently in-

clude collaborations with custom pool builders, a cross-disciplinary blending of perspectives and skills she sees as having profound potential for professionals on both sides of the relationship. Rose was a featured designer for episodes of "The Surprise Gardener" on HGTV and is an instructor for the Genesis 3 Design Schools.

**David Tisherman** is the principal in two design/construction firms: David Tisherman's Visuals in Manhattan Beach, Calif., and Liquid Assets of Cherry Hill, N.J. A designer and builder of custom, high-end swimming pools since 1979, he is widely known in the pool and spa industry as an advocate for the highest possible standards of design, engineering and construction. He has degrees and credentials in in-



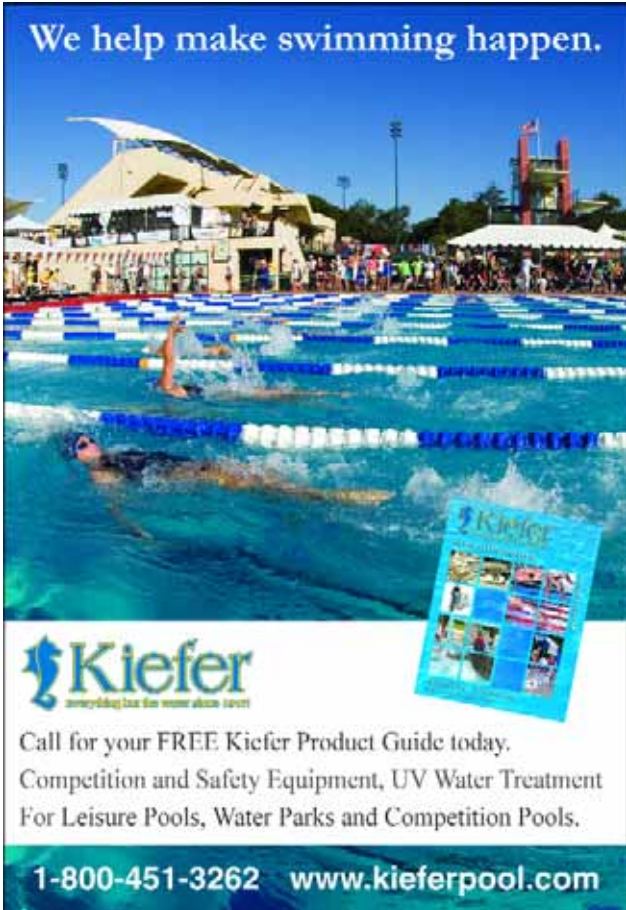
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dustrial design, scientific illustration and architectural drawing from Harvard University and Art Center College of Design and has taught architectural rendering and presentation at UCLA. An award-winning designer, he serves as an industry expert for California's Contractor State License Board. Tisherman is a co-founder of and principal instructor for the Genesis 3 Design Group.

**Mike Farley** is a landscape architect with more than 20 years' experience and is currently a designer/project manager for Gohlke Pools in Denton, Texas. After receiving his degree in landscape architecture from Texas Tech University, he began his professional career in California with a high-end landscape-design firm through which he became involved in several pool-re-modeling projects. He later joined Geremia Pools in Sacramento, Calif., where he worked for six years before returning to Texas in 1998. A graduate of the Genesis 3 schools, he assumed his current position in the fall of 2003.

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By Brian Van Bower

## Growing Awareness



**S**ometimes, just when you think you have things all figured out, something comes along to transform your point of view.

For as long as I've been a part of the watershaping trades in general and the pool/spa industry in particular, there have been those special occasions when I've had just the kind of experience that has caused me to see things with fresh eyes. Case in point is the trip I mentioned in my last column – the one in which I was heading to Germany with my Genesis 3 partners, David Tisherman and Skip Phillips, in an attempt to forge alliances with the people and organizations of Europe's pool and spa industry.

I'd suspected it beforehand, but I was surprised when the time came by just how significant the trip became and the valuable perspective it gave me on the way things are done overseas and their implications for what we do in the United States.

David, Skip and I have traveled together on several past occasions, and it's always been interesting and usually lots of fun. In this case, however, we were on a serious mission to discover what possibilities might exist for sharing education and information across the Atlantic. What we found were national industries that share much with their American counterparts but display vast differences as well – plenty of food for thought.

We recognized that we'd need to do some digging to find open-minded people and that there would be no guarantees that our efforts would be successful.

### flyiing united

Our goal in traveling this time was to lay the groundwork for some sort of international summit that would bring international organizations together in ways that might elevate the trades on both sides of the ocean.

That seemed a straightforward goal, but doing so immediately became more complicated than we had supposed. As it is here in the United States, the European pool and spa industry is fragmented and has numerous organizations with distinct agendas. Some were anxious to hear what we had to say, but others seemed to have no interest whatsoever.

In preparation for the trip, for example, I sent a package of information about our organization to one of the leading trade magazines in the United Kingdom – a comprehensive description of Genesis 3, our perspective on the state of the industry and what we saw as a potential for cross-pollination of our industries. To my disappointment, I received no response at all – complete silence. The same thing happened with a few other groups we contacted.

Right off the bat, this told us that, to whatever extent, the industry over there shares some characteristics with ours, including various measures of shortsightedness. I suppose that won't really come as a surprise, but in any event we recognized that we'd need to do some digging to find open-minded people and that there would be no guarantees that our efforts would be successful.

We pursued what avenues we could, making solid contact with the primary German trade association, *Bundesverband Schwimmbad & Wellness E.V.* (BSW) as well as a number of leading contractors and manufacturers – all courtesy of my good friend Gera van der Weijden, who has a great deal of experience marketing

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U.S. pool and spa products overseas and who served both as our liaison and as a Genesis 3 representative.

Fortunately, we found representatives of the German industry generally open to the idea of interacting with like-minded people from the United States. One of the people with whom we met was Guido Rengers, who runs a company that makes

fiberglass pools and spas and is currently president of BSW. We'd first encountered him at the 2005 Aqua Show in Las Vegas and agreed at that time that we'd get together in Cologne, Germany, at some point in 2006.

In the interval, we did our homework and learned that BSW participates in a larger organization called the European

Union of Swimming Pool Associations (EUSA), an umbrella for all groups within Europe's pool and spa industry. We had the reasonable thought that Rengers and his organization would be a good start in our quest for overseas affiliation.

## warm welcomes

Discovering what makes European organizations tick was our main focus in meeting with Rengers, but we also found that looking at his own manufacturing operation gave us a key insight that was somewhat surprising.

In the United States, fiberglass pools and portable spas are not typically considered to be high-end, value-added types of products by comparison to custom concrete structures. Right off the bat, Rengers' work with pre-manufactured systems opened our eyes: His products blow away anything of this category we'd seen or had our attention called to in the United States: We're talking vessels that embody both quality engineering and (in many cases) high-level aesthetics.

It was soon clear that nobody in Europe considers these types of products to be *any* sort of compromise compared to concrete watershapes: In fact, there's a contingent in the German pool and spa industry that sees fiberglass manufacturing as the very best of all possible ways to create systems that are as well-made and beautiful as any other available type of pool.

The fact that portable spas and fiberglass pools are generally seen in the United States as an inexpensive alternative to the "real thing" in concrete was one of the things that Rengers and others saw as a big separation between their industry and the American marketplace.

After our tour, Rengers had set up a meeting with key BSW members and staff – including the executive director, Dieter Rangol, who with his staff had gone to a good deal of effort in creating a PowerPoint presentation in English about their organization. There was definitely a language barrier that tended to limit direct discussion and the meeting started off slowly, but with van der Weijden's help in translating, we were able to make important inroads and establish a working, common ground. And as the day went

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on, we discovered that their English was a good bit better than our German!

One of the people at the meeting was Bert Granderath, who runs a company called Grando that manufactures a line of high-end, floating pool covers. Again, his company was in the business of making a top-dollar product in a category that, in America, isn't usually noted for high-

end solutions (the exception being floating covers offered by Aquamatic Cover Systems of Gilroy, Calif.).

Suffice it to say that it wasn't long before we noticed an emerging European theme in which quality isn't driven by product type or category the way it is here in the United States. Instead, it is based on the attitude of the people running the

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## same differences

We spent hours in our meeting, went out to dinner that evening and generally spent the entire day discovering what their industry was about. The next day we visited a variety of companies that represented different levels of the industry – and that's where things really began to get interesting.

First off, we visited what might be described as a rank-and-file service/construction operation, which aside from the language difference appeared as though it could've been a typical firm you'd find in the United States – same issues, same challenges. Then we visited a high-end design/construction firm that employed on-staff architects, created extremely advanced designs for spectacular projects and might be considered a rough equivalent of a specialist landscape architecture firm back home.

In all cases, we found people who, regardless of level of sophistication, were extremely hospitable and obviously saw the sharing of food and drink as a part of doing business – a distinction I'd noticed before along with the fact that the dress code is much more formal (suits and ties all around) than it is now in the United States.

In other words, what we found is an industry that takes the business of working with clients and other contacts very seriously. Frankly, all of this was quite refreshing – and it seemed to us that this air of sophistication and formality was something that actually put us at ease because we felt we were being treated with respect. Just by the way they dressed, they set the groundwork for meaningful, serious interaction – not to mention the fact that their attitudes simply made for a pleas-

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ant experience, which is, after all, what our products are all about.

In our discussions, we learned that many mid-range firms are suffering from market erosion because of Internet sales and volume operations that were stepping in to gobble up market share. Business wasn't as strong as it had been, they said, and they were looking to manufacturers to give them some form of geographically based exclusivity to counter the trend.

It all sounded even more familiar when the high-end firms told us they had no such concerns, conducted business with a broader international reach and obviously were secure knowing that the high end of the market was more stable, carried greater value and was actually expanding into more creative projects.

In that sense, what we found was that the European market, at least in Germany, appears to follow the U.S. paradigm when it comes to the high-end custom market's relationship to the mid-level sector. Our discussions of these similarities increased our sense of shared burdens – and provided a sound basis for discussion of additional interaction.

## engineered aesthetics

In our various tours, we also learned that in Germany and other places in Europe, pool and spa equipment is still largely made of bronze, brass and stainless steel. As an example, Rengers' fiberglass pools are set up with bronze skimmers – unusual for *any* body of water in this country and utterly alien in connection to fiberglass vessels.

What this reflected is a basic obsession in the German industry with top-to-bottom precision and durability. Everyone believes firmly, for example, in the value of proper hydraulic design, and we never saw any evidence of the use we see in the United States of oversized pumps and undersized plumbing.

How this all translates across the European continent I don't know, but in Germany at least, the nation's stereotypical fascination with precision and technological excellence is one of the pool/spa industry's defining characteristics. There was a lot of pride, too, and a conviction that they viewed their approach as supe-

**Our discussion of these similarities increased our sense of shared burdens – and provided a sound basis for discussion of additional interaction.**

rior to the ways things are done elsewhere.

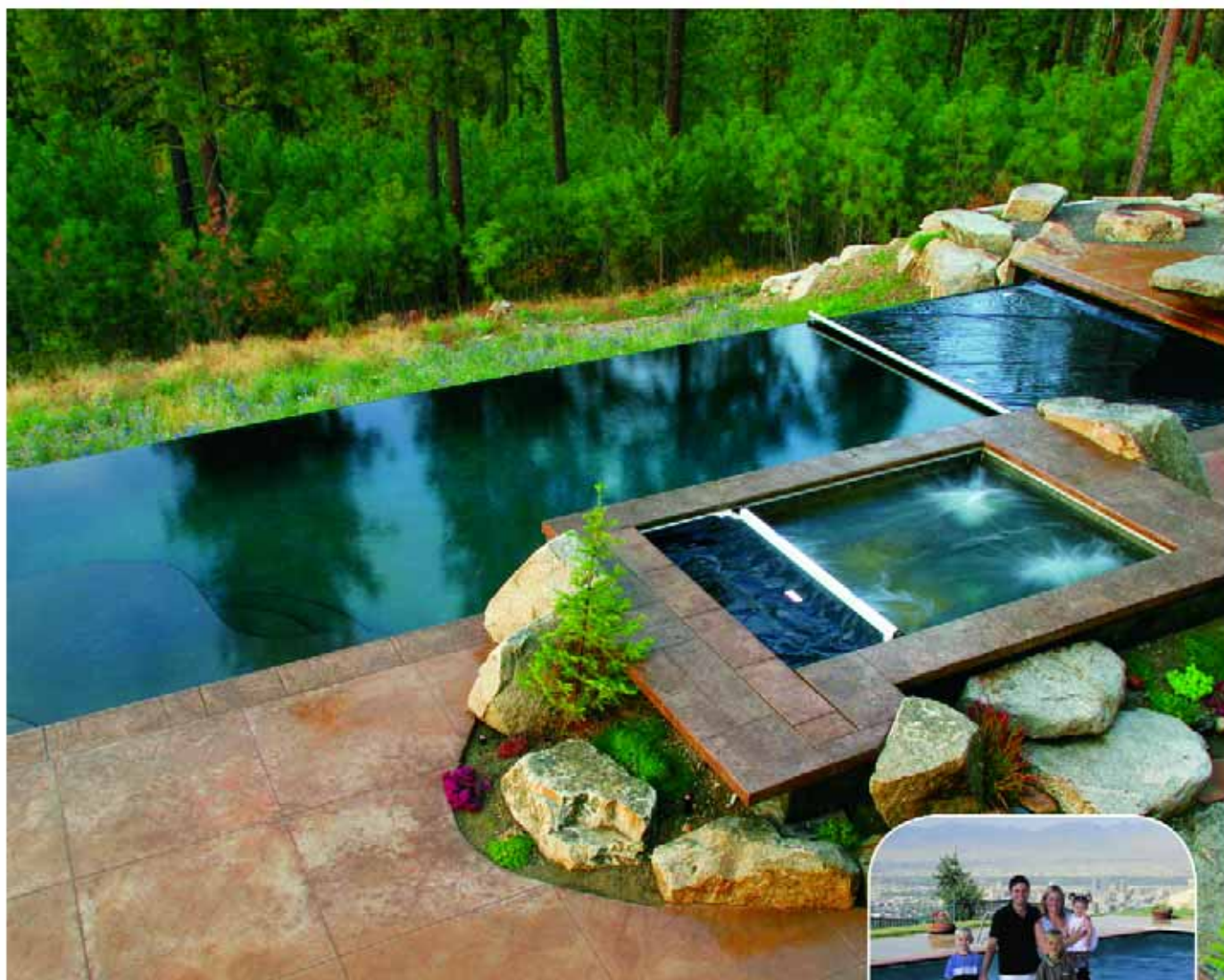
Moreover, we consistently found individuals at all levels of the industry who had a burning desire to elevate the aesthetics of their products and output – and many were intrigued that we at Genesis 3 focus so much energy on education in art history, color theory and basic design principles. In fact, if there is one area where it seemed we had a real opening with respect to an exchange, it was in this area of giving them the keys to making watershapes beautiful and aesthetically exciting.

The upshot? Well, on the one hand, we saw an industry that in many ways seems to operate at a higher level of professionalism with respect to technical sophistication and business decorum; on the other, we had the sense they had a long way to go in advancing the emotional appeal watershapes can and should embody.

David, Skip and I came away from the experience with a sense that there is indeed a great deal we can learn from each other, and all three of us were interested to see the prevalence of a high-end attitude in sectors that have not generally taken the high-end road to success and even prestige in our home country. Conversely, there's no question that the advances we've made in the United States with respect to unleashing creative, beautiful designs is admired by our European counterparts.

All of this reinforced my belief that learning about the bigger world can inform and possibly transform the work of individual firms and the industry at large. For my part, I'm excited by the idea of returning to Germany and other European countries to further this dialogue – all with an eye toward gaining a greater grasp of the all-important "Big Picture." **WS**

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By Stephanie Rose

## Root Barriers



**O**n just about any site, we run into hidden obstacles – everything from underground pipes or leftover debris from other construction to myriad other surprises – and many of them are easily dealt with either by removing the barriers or redirecting things around them.

But what happens when the obstacle is alive and growing and you can't remove it or escape from it? In these situations, you have to do your research, get creative and, above all, take the matter seriously. Case in point is a garden I'm designing for a project with David Tisherman – the one discussed previously where I'm developing a white garden for my client (see *WaterShapes*, November 2006, page 18).

As mentioned in that column, the property includes a large *Ficus nitida* hedge that rises to about 40 feet tall and in some places is 20 feet wide. When David, landscape contractor Pat Kirk and I first looked at the site, none of us were particularly disturbed by the imposing nature of the hedge, which provides much-needed privacy from surrounding homes and businesses and is just as important to the homeowners as the new pool and garden soon will be.

But being keenly aware of the damage *Ficus* roots notoriously cause, I brought up the possibility that they might create problems for us. The roots of these

The roots of invasive plants can wreak havoc on landscapes, hardscape and pools, and I suggested that we needed to be proactive in this situation.

invasive plants can wreak havoc on landscapes, hardscape and pools, and I suggested that we needed to be proactive in this situation to prevent major problems down the line.

### getting dirty

With only a cursory inspection, Pat and I found that at least one *Ficus* root had already reached out 25 feet from its trunk – and neither of us harbored any thought that only one of the plants was being so aggressive. I expressed my concern that the roots would most likely kill any lawn we planted by surfacing and drawing away the nutrients the grass would need to survive.

Of even greater concern, of course, was the damage the roots might do to the new pool and hardscape. The vessel was to have minimal coping, so irrigation water would easily migrate right up against the shell. Well known for breaking plumbing lines, it wouldn't be long before the roots found their way inside the pool itself – I've seen it happen!

Once I raised a convincing alarm with David and Pat, I called an arborist friend of mine for advice. Without even seeing the hedge, he told me that its roots should not only be contained for the sake of the new hardscape features in the yard, but that the plants could potentially kill or destroy anything and everything in their roots' way.

He further recommended that we call in another arborist who works with an airspade, a device that "digs" with a jet of pressurized air, clearing away dirt without harming roots. This arborist would clear a trench for us two feet deep and wide enough for installation of a root barrier, a process that would involve carefully cutting any roots that stretched through the trench in a manner that would not compromise the health of the trees. Once cleared, the trench was to be filled with concrete – the best barrier

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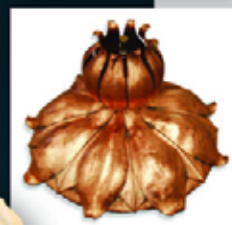
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against future encroachment.

I've experienced many sites where clients have "throw in" Ficus hedges because they know they'll grow and cover fast – and they think they'll have time before invasiveness becomes an issue. In most cases, however, they forget about the pending problem and often come to regret it.

I was quite concerned about what we were up against. I'd nearly been sued once before because of plant invasiveness (in my case, it was bamboo that worked its way around the containment system we'd devised), so I was unwilling to take a chance here. The clients prized their hedge, so we needed to protect it from what we were doing at the same time we needed to protect all of our work from the hedge.

## more research

I hadn't installed the hedge, so I was doubly concerned over the fact that it was so well established and so obviously out of control. There was no way that David, Pat or I wanted to be held accountable if anything happened to the hedge down the line, not to mention anything happening to the pool, hardscape or planting.

Continued on page 24



The homeowners didn't want anyone to tangle with this huge Ficus hedge – and for good reason, since it afforded them a good bit of privacy from nearby homes and businesses.

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## natural companions

The second arborist surveyed the situation and confirmed the fact that we needed to contain the Ficus or face the potential for serious problems later. Immediately, we decided to cut a trench two feet deep and one foot wide into which we would build a reinforced-concrete root barrier.

The arborist also suggested that we put a full-length PVC root barrier on the Ficus side of the trench before we pumped in the concrete, as the PVC would create a barrier between the moist/cold concrete (attractive to roots) and minimize the prospect of the roots doing the barrier any damage. The added cost of the PVC barrier was negligible and, we felt, worth the benefit as yet another precaution.

When all was said and done, we reduced the width of the trench to seven inches, leaving enough room for the PVC root barrier, the rebar and enough concrete to ensure adequate resistance to the pressure that might be applied by large roots. This reduction in the size of the trench also enabled us to save the clients some money, as less concrete was needed.

Although the homeowners were grateful for this price reduction, they had a not-uncommon reaction to the work we were doing: As they put it, it



The problem, of course, is that Ficus plants have amazingly powerful, highly invasive roots that will destroy just about anything in their path – a fact that led us to hem them in with a long, buried, reinforced-concrete wall.



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**To me, this is a type of discussion that should take place on every job site, especially when existing invasive plants are being kept as part of a new design.**

still seemed like they were spending a lot of money on something they were never going to see.

As I explained to them, this is a case where what you don't see is exactly the thing that is keeping everything you do see from harm. Without the root barrier, the Ficus hedge would eventually destroy everything in its path.

This is, by the way, exactly the same sort of conversation David has with clients when he puts tons of steel and concrete under pools to keep them from sliding down hillsides. It's also the discussion that occurs with quotes for irrigation systems: People won't see the system or its components, but they surely will see what happens if things aren't working or the system proves to be improper or inadequate.

The point is, clients need to understand that they will not always see everything they are paying for. The value of the (invisible) root barrier is its assurance that the visual they'll see the day we walk off the property will stay in place and not be disturbed by wayward tree roots in the foreseeable future.

### **concrete reasons**

I'm a true believer in root barriers and often use them to keep roots from creeping into neighboring yards. Many types are available, and I've used most of them – PVC and concrete as well as the containers in which the plants arrive.

To me, this is a type of discussion that should take place on every job site, especially when existing invasive plants are being kept as part of a new design. I generally try to convince my clients to replace these plants, but that's not always possible for reasons of money or time. (That was certainly true in this case, where waiting for any new hedge to grow to 40 feet high and 20 feet thick would have been out of the question.)

My main point here is that you need to assess the threat posed by existing plant material or any new plants you're installing and take appropriate steps to prevent future problems. It's our job as professionals to think about these issues before they become a problem rather than being forced to take action (or get hailed into court) once disaster strikes.

In this situation, the root barrier we've installed will enable us to plant a large lawn and set an abundance of hardscape features without fearing they will be destroyed down the line. Only time will tell how well this solution has worked, but I'm more than confident that what we've done has averted what might have been a "redo" in just a few short years. **WS**

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By David Tisherman

## From the Top



**T**hrough the years in these pages and elsewhere, I've been a persistent critic of the shortcomings of the watershaping trades in general – and especially of the pool and spa industry in which I've operated for more than 25 years.

Sometimes I've been harsher than others, but my intent has invariably been to define the difference between quality work that elevates the trade and the junk that's held back our industry's reputation. I've never named names, but I've been particularly hard on practitioners who seem eternally stuck in old ways of thinking and working: Their work seldom lines up with the best efforts of which the industry is capable.

Just recently, I had a long talk with WaterShapes' editor in which we discussed the development of a new approach to conveying my message about the need for new ideas, techniques and attitudes. You'll see the results in the next several issues, in which my column will be dedicated to what I consider to be the building blocks of success and the keys to working at a truly professional level.

It's a systematic approach that will look at each phase of the design/construction process, but rather than attempt to teach you how to build quality pools and spas, my aim is to trigger thoughts about issues, ideas and actions that separate our industry's best efforts from those that simply don't make the grade. It's all about moving forward in a positive direction – and it starts here:

More than ever before,  
consumers appreciate  
the proper use of color, get  
excited about design ideas  
and motifs and know the  
value of spatial integration.

We're in the middle of a process of stratification of the watershaping trades. It's not the old layering of high-end, mid-range and cookie-cutter operations as it was in the old days. Instead, this current stratification has to do with levels of quality – and it's a process that was initiated by our clients, not us.

The people interested in purchasing watershapes and exterior environments these days are more sophisticated than ever before, no matter their economic level. The Internet, ease of travel, media interest and the emergence of four- and five-star resorts that distinguish themselves through incredible watershapes have made the world a much smaller place and provided consumers with unprecedented access to information that energizes and shapes their attitudes about what they want.

The result is that today's consumers are better informed about our products than ever before. They are also educated, have an appreciation of art and art history and are equipped with a better appreciation and understanding of design than they were when I started in the industry in 1979.

More than ever before, they appreciate the proper use of color, get excited about design ideas and motifs and know the value of spatial integration – and when they call in a watershaper to discuss an environment that will suit their needs, they expect us to be up to the task of providing them with a sophisticated product that reflects true quality in design, engineering and construction.

It's my observation that this demand for an intelligent, quality approach reaches from the high end on which I operate all the way through to clients with far more modest budgets.

Continued on page 28

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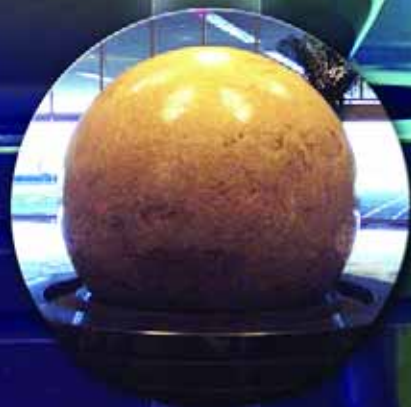
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## making connections

If it's not clear so far, my focus is (and will always be) custom work. This is the field in which quality designers and builders are thriving and doing increasingly exciting work these days.

If you're a volume operator, what you'll find here won't be of much use to you because your approach to the market is the

antithesis of custom. Your business is about templates and margins and time and impulse buying, whereas custom work is about thoughtful responses to a site and the clients.

My intention here is not to convert volume operators to a new way of thinking; rather, it is to inspire designers and builders who traffic in custom

work: If you're among those who've been stretching your abilities in more creative, design-based directions, odds are you'll find value in much of what I have to say.

For starters, every one of my projects is about presentation. As I've mentioned many times in this space, I don't view the interactions I have with clients at the outset of a project as selling; rather, it's a sharing of ideas. I don't discuss price with respect to option A or B or get into associated costs. Instead, I start as a designer seeking to collaborate with clients so they'll wind up with something that makes them proud and happy.

It's all about *design* in the truest sense of the word. In my book, those who use the design process as a sales tool have fallen into the trap that has hog-tied our industry and led consumers to see us as a clattering collection of suede-shoe hucksters. Using a quick, template-based design to close a deal devalues the design process, guts any sense of creative interaction and basically removes the process of creating watershapes from the realm of design.

I'm equally offended by those who call themselves "designers" without having the education, training, experience or talent required to do so. They lack credibility and fall short when it comes to insight into basic issues that drive good design (such as understanding the architectural context and recognizing that a watershape should usually be just part of an environment, not its focal point). Their work simply doesn't hold up to scrutiny.

You decide: Are you in the business of selling something that anyone can have at a price anyone can afford? Or are you engaged in an artistic process that has value far beyond time and raw materials?

I've worked for decades at building client relationships that, from the start, are defined by open dialogue and trust. In that light, I'd be hard-pressed to identify the exact moment when *any* client is "closed" in the traditional sense. What happens is that, through a process of discussion and inspiration, the relationship unfolds naturally and has to do with the clients' response to my credentials, the expectations we establish and the rapport

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we build in discussions of design possibilities, materials, style, the setting and the clients' desires.

I've never done it any other way, but I'm convinced it can work for others because of what I've heard from those who've reshaped their approaches based on what I've conveyed to them. By taking the selling out of sales and replacing it with design discussions and collaboration, they say, they've redefined the nature of the work from the first "hello."

## the phone rings

This approach should be reflected from the moment you pick up the phone.

To be sure, clients who call me almost all come from some type of referral, so my leads are rock solid. I know there are companies that will canvas an area with mass mailings or door hangers that promote a given type of pool at an appealing price. Almost invariably, the response to these promotions is from unsophisticated people – and I'm just not interested.

**I'm clear throughout that I only do quality work based on sophisticated design principles and that, for many people, that's not 'competitive' with respect to the correlation I see between *money* and *gorgeous*.**

Even so, and even if you are determined to pursue only quality projects, you still need to qualify the clients in their first call: None of us wants to waste his or her time chasing someone who's looking for a product we're not prepared to offer. So when I get on the telephone, I'm after a few key pieces of information and can usually get what I need in just a couple minutes.

My first question, always, is about how they found me and why. If the lead has come through the phone book or through the Internet, I'm immediately skeptical – and it's not because I'm in the business of turning people away, but because it's un-

likely such a prospect understands the nature of the work I do.

I'll stay on the phone for a few minutes to find out if they're a good fit for my approach, but odds are, if they're shopping and don't want something purely artistic, it's probably going to be a very short conversation. I never hesitate to tell random callers to look elsewhere, but sometimes I refer them to my web site for a close look so they'll develop a clear impression of what I do and the level on which I operate. If I hear from them again, we will have something to discuss – but usually they disappear and never call me again.

Continued on page 32



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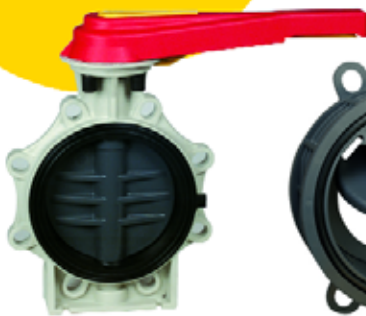
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If, by contrast, they're a referral from a former or current client, a quality supplier or another professional (architect, landscape architect, designer, soils engineer, structural engineer, geologist) who's familiar with my work, then the conversation will continue.

If we stay on the line, I try to determine what they want. If it's a "cattle call" in which a parade of ten companies will make presentations, I'm never interested. (I can tell an awful lot from the list of people they've contacted. If there are any volume operations on the list, I'm almost always gone. If there are quality names on the list, however, I'll maintain contact until the picture becomes clearer.) I don't object to my clients looking around or talking with other people, but I *do* want to shake out those who are obviously shopping for the best deal rather than looking for a quality design.

I'm clear throughout that I only do quality work based on sophisticated design principles and that, for many people, that's not "competitive" with respect to the correlation I see between *money* and *gorgeous*. If I get immediate questions about what something's going to cost, I'll quote a ballpark price that makes the tire-kickers jump way back.

I do this for good reason: In custom work, there's really no way to know a price range until you get into the process, review the soils and geology reports, confer with the engineers and start looking at materials – things I don't do for free in any event.

## getting specific

If the conversation gets past the often-insurmountable "price-first" hurdle, we keep talking and my next need is for some sense of the site and the project's scope.

I'm not trying to qualify the client any further at this point; instead, I'm trying to key my thinking in the right directions. I've done a great many projects that are quite small in terms of size and scope, and not only doesn't that bother me, but some of these projects have been among my favorites. The point is, by learning just a little bit about the site and the clients' desires, I can begin the process of educating them.

Continued on page 34

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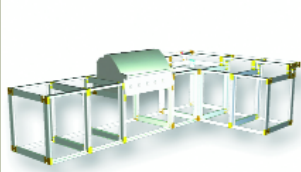
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## tisherman: detail 71

**These basic discussions set the stage for every conversation that might follow, because the clients need to understand that all design must be predicated on reliable engineering and construction relative to the conditions at hand.**

If they tell me it's on a hillside, for example, or in an area that I know has variable or problematic soil conditions, I immediately start talking about soils testing and structural engineering.

Often, people don't really have any idea about the value of those functions, but as they must know (and we all should know as watershapers), the entire program with respect to price and just about every other aspect of the work really flows from soil conditions.

Once that's been covered, we move on to talk about the nature of working in concrete and steel and the education process really gets going.

These basic discussions set the stage for every conversation that might follow, because they need to understand that all design must be predicated on reliable engineering and construction relative to the conditions at hand. Then the nature of quality hydraulics enters the scene and I begin the process of defining the nature of my approach to the work in a way that distinguishes me from almost every other watershaper they might encounter.

In essence, what I'm defining for the client is that, with me, they're either going to get the best, most reliable structures and systems I can design and build – or nothing at all.

Assuming they're still interested at this point, I'll start setting expectations for what's to come: that we'll get together at their home for an hour or two to talk in depth about what we can accomplish together and that, after our meeting, I'll go back to my studio and create a design proposal for which they must pay. There is no further mentioning of cost until I have processed all the reports I need to move forward with confidence.

I don't want them thinking that this meeting will produce a design, as would be the case were they speaking with a production builder. Instead, I let them know that we've just entered into an on-going design dialogue.

### in person

If their interest survives this far into the process – and mine does, too – I'll set up a face-to-face meeting at their home (or on site, if it's somewhere else).

That meeting will only happen if all decision-makers are present. That is, if it's a married couple, I make it clear that I will not meet with only one spouse or the other, because experience tells me that's quite often a waste of time. Too often, such discussions devolve into a series of deferrals pending conversations with the spouse or partner who's not present. Just as important, I want to get to know these people: There's really no way to do that unless they're both there.

If all of the above comes up in the affirmative, we'll proceed to the next step – the meeting – which we'll discuss next month. **WS**



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# Breathtaking Beauty

For nearly 150 years, the Missouri Botanical Garden in St. Louis has been a delight to those who've visited its array of garden types and styles. During the last 30 of those years, many of these areas have been augmented by the addition of waterfeatures and fountains, notes Kerry Friedman of Hydro Dramatics, a company that has worked hand in hand with facility managers and sponsors to bring new interest and special excitement to the grounds.

By Kerry Friedman

*'Any time that you can introduce water or the sound of water into an environment, the space is instantly transformed.'*

— **Geoffrey Lew Rausch, FASLA**, 2006 recipient of the Henry Shaw Medal for his work at the Missouri Botanical Garden

**During** the past three decades, the Missouri Botanical Garden has undergone a wonderful transformation, and much of it has been about water.

In that span, more than a dozen fountains and waterfeatures have been added to the 79-acre grounds of what many have long considered to be one of the top three public gardens in the world – and happily, our firm, Hydro Dramatics of St. Louis, has had the privilege of working on all of them as project leaders.

These installations have ranged from the simple to the complex. Whether serene or splashing, barely bubbling or shooting skyward, our work has added a unique spirit and drama to many already-beautiful sites. In addition, they've involved us in memorable collaborations with the garden's creative staff, generous sponsors and the more than 850,000 people who come to see the garden every year.

For our part, the diversity of the water-shapes we've developed for our hometown's pride and joy has given us the chance to explore and employ cutting-edge technology, work toward a number of specific programmatic goals and, perhaps best of all, observe the long-term reception our work has enjoyed among visitors of all ages – including our own children.

## Historical Assets

Serene settings are often reciprocal: Even though you're paying attention to a fountain or waterfall in a very public space, you

Photo by Jack Jennings

experience very private moments as you sit or stand there, alone with your thoughts. By contrast, interactive spaces invite active and joyous participation, and children of all ages jump at the chance to hop, splash, play and cool off.

All of this – basically the totality of the way we relate to water – is encompassed by the Missouri Botanical Garden, where everything from contemplation to playful interaction has been encouraged and embraced.

Established in the 1850s by Henry Shaw, a prominent businessperson who made his fortune selling goods to Westward-bound traders and settlers in wagon-train days, the garden has long been a source of pride in St. Louis.

Inspired by the gardens he'd seen in his native England, Shaw enlisted the eminent botanist, Dr. George Engelmann, to transform a treeless stretch of prairie into a garden showplace that was first opened to the public in 1859. By 1971, it had been designated as a National Historic Landmark and, under the direction of current president Dr. Peter Raven, has become a world-recognized center for botanical research,



The Shapleigh fountain was our first project for the Missouri Botanical Garden. Back in 1974, its potential for interactivity made it an instant attraction and initiated a period (lasting to this day) in which watershapes of all sorts have regularly been added to the facility.



Photos by Jack Jennings



A model of modernism, the Shoenberg Fountain was our second project in the gardens – and a technical challenge on several levels, not least of which was covering the entire, expansive surface with water in a way that made it seem effortless.

Photo courtesy Missouri Botanical Garden

education and horticultural display.

Waterfeatures have always been a part of the Garden, but the governing entity's interest in expanding the use of fountains and waterfalls as moving, audible focal points took a giant leap forward in 1974, with the opening of the Shapleigh Fountain – our company's first project in the garden.

Designed by the St. Louis-based architectural firm of Mackey Mitchell & Associates in collaboration with our design team, the Shapleigh Fountain is an interactive waterfeature that made its mark almost immediately – especially among children who flock to it when the weather turns warm.

During the construction process, we suggested design modifications, increased the fountain's efficiency and fabricated and installed the components – restricted but significant involvement. And the results were and still are magnificent: With its ornamental grates set at ground level to disguise the fact that the fountain's works are located just below grade, the Shapleigh Fountain is a total "fountain experience." Visitors can pass through the

Standing opposite the main entrance to the Missouri Botanical Garden, the Latzer Fountain has become the facility's icon – a backdrop for weddings and family portraits all year 'round. It's also available for special uses, as seen in the sidebar on page 45.



Photo by Charles Schmidt



The swing toward fully interactive fountains started with the installation of the 'Leaping Frog' Fountain in 1996. This project's laminar-flow jumping jets were a bit ahead of their time and required an awesome amount of engineering and testing to get things right.

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Photos by Jack Jennings

fountain, wet or dry, to sit in the exact center where they are surrounded by a circular array of pulsing sprays that shoot up in stages to a height of eight feet.

On sunny days, this fountain is magical, with multiple rainbows dancing in its sprays as a mesmerizing visual treat. And its overnight popularity opened a door: Once it took its place as an attraction, the momentum toward water displays was irresistible.

### Signature Features

With the Shapleigh Fountain on line, landscape designer Geoffrey Rausch and the principles at Mackey Mitchell approached us to provide equipment for another watershape, the Shoenberg Fountain – an altogether different design concept.

This thoroughly contemporary fountain confronts visitors with a large slab of smooth, angled concrete topped by a sheet of flowing water that ripples silently down the fountain's face before disappearing at the bottom. The challenge here was

equipping the system to achieve a sense of effortlessness – this despite the fact we were pumping water at a steep angle, reclaiming it under the sidewalk and moving it rapidly back to the top of the slab to renew the cycle.

From there, we moved on to the Latzer Fountain in 1982, perhaps the most prominent of all the garden's watershapes. A popular and dramatic backdrop for weddings and family and group photographs, it basically serves as the garden's "goodwill ambassador," greeting visitors when they first enter the facility through the Ridgway Center.

In many ways, this was the most challenging of all our garden projects. During the design stage, we worked closely with Rausch, who thought it important to make the fountain multi-seasonal and spectacular because it would be the first feature visitors would see in entering the space. He wanted the fountain to offer, as he put it, "a distinct, celebratory effect."

We worked carefully with him both to

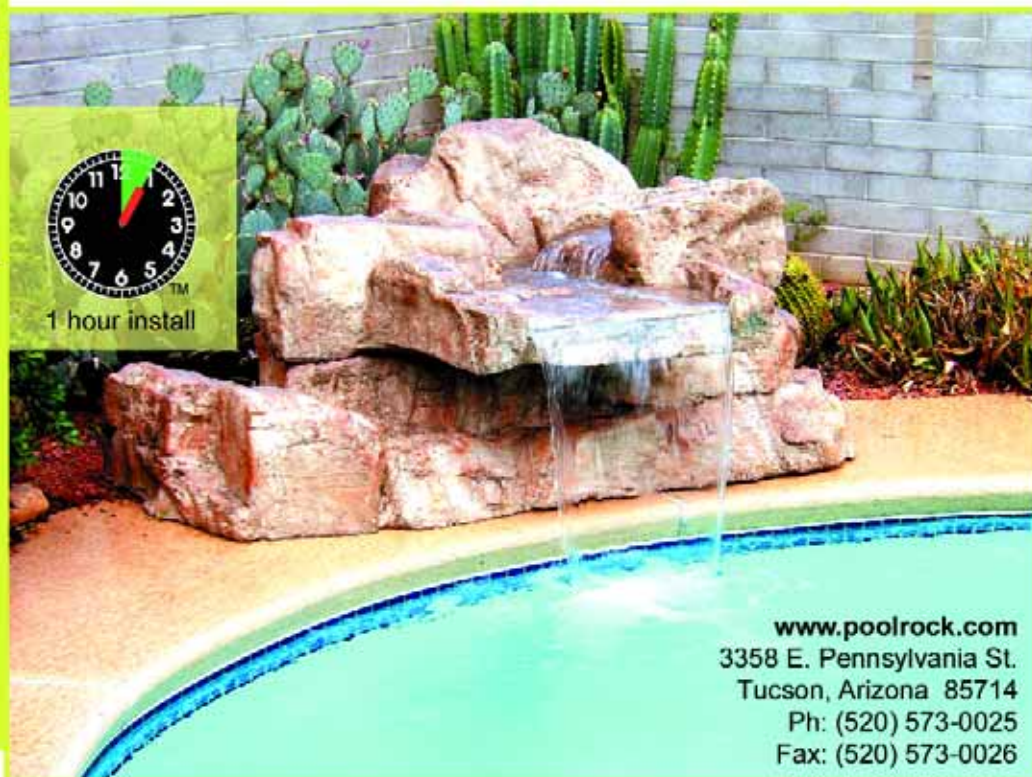
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We've worked water into a number of small displays related to animal sculptures that have appeared in the gardens during the past 30 years – including the wonderfully interactive 'Three Playful Raccoons' fountain, shown here.



Photo by Tim Parker



'A Missouri Adventure' took watershaping for the garden to a new level, with a display dedicated to introducing children to life on the rivers that cut through St. Louis. All the controls for the various play fixtures, waterfalls and streambeds are contained in the wheelhouse – equipment, controls, filters and more.

simplify and modernize the original design, but we faced a conundrum: How could we maximize the fountain's dramatic potential yet manage water sprays that might utterly *drench* passersby when winds kicked up?

Through our collaboration, we came up with the idea of deploying special wind sensors that would shut down the fountain's 10-inch feed pipe whenever the wind blew at more than ten miles an hour. The shutdown would in turn trigger a single, large geyser from the fountain's center, thus maintaining a fountain effect without soaking visitors. We also suggested incorporating a basin into the design to provide an attractive seating area when the fountain had to be turned off.

Another Latzer Fountain challenge had to do with developing a system in which all working elements could be placed underground, including plumbing, pipes and the equipment involved in raising and lowering individual sprays. Our successes here produced a stunning and practical fountain. What's more, as trees grew

in around the perimeter of the plaza, they provided a natural windbreak: Today, the fountain can function fully – no matter how windy the day – without any risk of drenching those who come to enjoy it.

### Complex Jets

In subsequent years, thoughts turned from display fountains to those with a more interactive stamp.

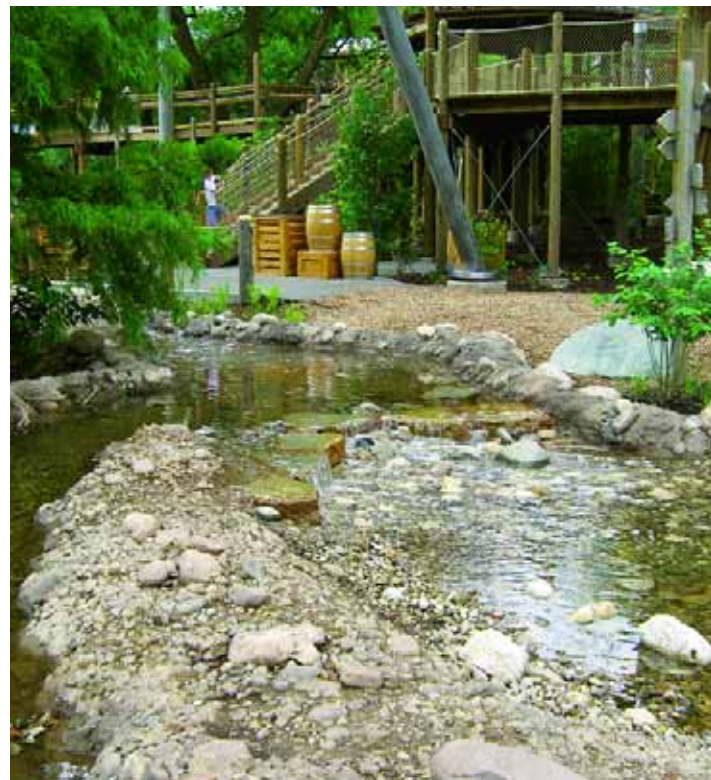
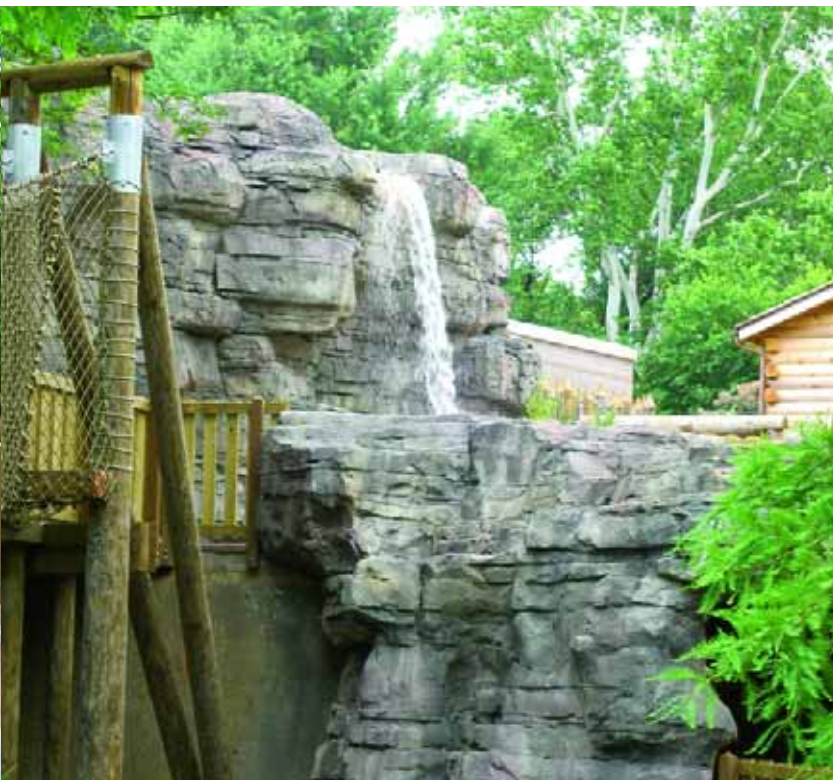
One of the earliest efforts along these lines had to do with creation of the "Leaping Frog" fountain in 1996. Located within the Ruth Palmer Boxwood Garden, this watershape uses a form of jumping-jet technology that was both a bit ahead of its time and extremely difficult to engineer and manufacture.

The challenge for our design manager, Dan Heinlein, entailed working with laminar jets that had to be set with arcs of certain degrees to achieve optimum water flow. Calculating this required mathematical preparation, plentiful drawings and empirical observation of models and test versions.

The result of this careful design development was an interactive fountain that sends silvery, well-defined "ropes" of water hurtling ten feet across walkways in crisscross patterns that create a visual archway. They seem to shoot up only from one end, but that impression is actually built using two separate half-arcs.

The garden's exploration of interactive waterfeatures actually began in the late 1980s, when groups of animal sculptures were visualized among a range of playful sprays. At that time, noted Missouri artist Robert Lee Walker was commissioned to create bronzes for the William T. Kemper Center for Home Gardening. Determining how to add water to these popular sculptures was actually quite easy compared to some of our other work at the facility, but it was quite rewarding just the same.

Again taking charge as project manager, Heinlein built mock-ups and prototypes for the various planned sculptures and was instrumental in designing copper-tubing elements that Walker built into some of the sculptures. In his "Three





George Washington Carver is memorialized in a large acre-and-a-half space, complete with two fountains and a reflecting pool.



Photos by Erin Whitson

Playful Raccoons” fountain, we brought water into a highly interactive area while hiding all of the fountain components under the large, circular grate in a brick plaza. To achieve optimum effects, we included leveler controls, a submersible pump to recirculate the water and separate valves and nozzles for each smaller fountain – all driven by a single pump.

We also added water to the “Four Playful Otters with Fish” fountain as well as the “Three Dancing Geese” and “Six Dancing Geese” fountains and the “Two Playful Peacocks” fountain. The latter had to have its plumbing integrated into the sculpture as Walker was forming it – more than a dozen nozzles in all.

## Recent Arrivals

By the late '90s, we were old hands at working on waterfeatures for the Missouri Botanical Garden, and in 2006 we played an integral role in providing three new waterfeatures for the public to enjoy.

Among newer fountains is a system located in the Doris I. Schnuck Children's Garden. Titled “A Missouri Adventure,” this watershape takes the facility in an all-new direction by providing children with an interactive opportunity to explore 19th-century life along the river. Among the prominent watershapes we installed in this two-acre space is a popular cooling/splash area complete with “popper” jet fountains and a mushroom pump.

We arranged all pumping and control systems for these watershapes in a single pump house designed to resemble a paddle wheel and also supplied all the necessary equipment, controls, filters and chemical systems for the space's dazzling waterfall.

In addition, we worked on the watershapes in the George Washington Carver Garden, a fitting tribute to the renowned educator and prolific agricultural researcher. In this acre-and-a-half space, the focal point is a life-size bronze statue located on a walking bridge between two fountains and a reflecting pool.

At the request of the garden staff and in keeping with the overall design, we installed all of the fountain equipment underwater instead of at a remote location or an underground vault. This approach has been favored in the garden

Continued on page 47

## Artistry in Glass

As this article reaches print, the Latzer Fountain is approaching its last month as host to an outstanding exhibition: For the past few months and through to the end of January 2007, the fountain has been the setting for a huge glass sculpture that's part of a major, garden-wide installation by renowned Seattle glass artist Dale Chihuly.

The installation and integration of the Chihuly piece – a contemporary, cubical, translucent-glass sculpture reminiscent of floating ice cubes – into the fountain system required intense co-operation and synchronization.

To allow the exhibit installers and garden staff to work without any extra difficulty, we completely shut down the fountain system. Once the glass sculpture was in place, we powered up the fountain in small increments, increasing the water flow gradually until we reached what everyone agreed was the critical height for maximum aesthetic value. The result – especially when lit at night – is incredibly dramatic.

Such good things must come to an end, and we know already that removing the sculpture when the exhibit ends will undoubtedly require another careful team effort.

–K.F.



The exhibition of glass works by artist Dale Chihuly was scattered throughout the garden's many spaces and often interacted with watershapes – perhaps most strikingly in the Latzer Fountain (above), where the glass blocks rise like giant ice cubes in a cup of frothing water.





Photos by Erin Whitson



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In addition to fanciful projects with lots of interactivity, we've also worked with classic forms, as in the Ottoman Garden. Here, we developed a simple octagonal fountain in the Islamic style, with small arcing sprays. On the wall behind, we set up a traditional, tiered fountain – all simple but effective.

for years – so much so that it's a tradition we didn't even question.

Then there is the Ottoman Garden, a unique quarter-acre garden devoted to the Islamic design sensibility as expressed

during the long tenure of the Ottoman Empire. Here we installed a traditional fountain – a *selesibil* – in which water drips down the tiers of a wall to create a pleasing, relaxing experience. The garden's focal point is a shallow pool with jets spouting gently along the rim – another classic design.

One of the challenges we faced in adding these new waterfeatures had to do with the fact that the general area also encompasses the Swift Family Garden and the Isabelle A. Baer Garden – spaces that already had watershapes and equipment arrays into which we had to integrate the new technologies that were to drive ours. After a thorough study of all of the elevations that were to be affected (as well as a careful review of the designer's intent), we were able to develop a one-for-all control system.

### Water Added

Our lengthening collaboration with the Missouri Botanical Garden has been ben-

eficial all the way around, making the facility more attractive and fun for its visitors while enabling us to radiate our expertise and the technologies we've developed to other projects and clients. The submersible pumps and filters we created for the garden, for example, proved equally applicable to the beautiful watershapes at the Chicago Botanic Garden in Glencoe, Ill., as well as in many other projects across the United States and throughout the world.

Through our collaborations and by adding water to these important public spaces, we've been able to enhance the experiences of tens of thousands of visitors who use these spaces on a daily basis. The fact that it all started on the grounds of one of our hometown's main points of pride has made it all special – and it hasn't bothered any of us one bit that we ourselves are among the visitors who get to enjoy the facility on a regular basis with our parents and children.

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# Classic

## Perspective

By Rodger Gariano

Art with mosaic tile reaches back thousands of years to the ancient Greeks and Romans, yet in addition to its classic appearance it also has a flexibility that makes it fully adaptable to modern applications. This combination of design tradition and contemporary possibilities has led the artists at Vita Nova of Van Nuys, Calif., to step up and create new tile mosaics that keep all aspects of the material's aesthetic potential front and center.



For the last few months, the Getty Villa in Malibu, Calif., has hosted a special exhibit called "Stories in Stone," which is all about the nature, preservation and conservation of stone mosaics found in the ancient Roman cities of North Africa.

Even a quick walk through the halls is enough to show why these art objects speak to us across the millennia: Their colors are vivid, their decorative capacity is amazing, their durability is unrivalled and their sheer beauty is a delight even to the unschooled eye.

At best, tile mosaics of any caliber are both aesthetic and functional, timeless and contemporary, subtle and dramatic. They are also versatile – interior or exterior, commercial or residential –

and have long been among the very best media available to designers and architects looking to infuse their work with the essence of elegance, timelessness and quality.

Our company, Vita Nova of Van Nuys, Calif., was founded with the simple, profound mission of bringing this classic art form into the modern world, delivering the wonder and beauty of tile mosaics to contemporary observers and countering the overwhelming sense of disposability that surrounds us. By providing a product that is both permanent and exquisitely beautiful, we're doing all we can to reestablish in the United States an art form that has been prized for more than 2,000 years.

### New Moves

In our own way, we've augmented the classic form by using a variety of materials, including not only stone but also glass, ceramics and metals. We also look at the possibilities of the medium with modern eyes, creating mosaics associated with any number of stylistic traditions.

For all that sense of innovation, however, our approach is based firmly on the great tile-mosaic traditions of Ravenna, Italy, where for centuries artisans have manufactured some of the world's most beautiful tiles and subsequently arranged them into mosaics that have graced the palaces of royalty, brilliant public spaces and even the



homes of everyday people.

Tile mosaics are steeped in art-historical traditions that cross time, cultures and geography. Along with my partner and company co-founder Richard Skalak, I have an extensive background in art and art history as well as a passion for transmuting the grand traditions we'd studied into a usable and living art. When we started our company in the mid-1980s, mosaic art was largely lost in the United States, and the few installations here originated almost exclusively in Europe. It was our observation that there was a huge void that needed to be filled.

I became directly involved with mo-

saics while pursuing graduate studies at the Academy of Art in Venice, Italy, where grand traditions in tile were among the hundreds of media to which we were introduced. As an architect, I subsequently began using tile mosaics in many of my projects and gradually became more and more focused on them – always with the idea of stretching the limits of the medium.

Today, we work in the full range of possible settings both residential and commercial: homes and resorts, inside and outside, in watershapes and kitchens, on patios and in dining rooms, on vertical surfaces and on horizontal ones. And although we cover a range of styles and imageries (Greek, Roman, Islamic, Moorish,

Romanesque, Baroque, Neoclassical and completely contemporary) and push the envelope with respect to material combinations and colors, our connection to the past is always clear.

Among our most noteworthy (and viewable) projects are Bellagio and the Wynn Hotel in Las Vegas, where we worked directly with the owner and the project teams to develop extensive mosaics for a variety of exterior and interior settings. On the residential end, we collaborate with an extensive network of designers and contractors who get us involved in their projects time and time again, engaging us in creative dialogues that are taking the art form in increasingly interesting directions.

Our first step into watershapes resulted from a basic observation that waterline tile was lack-luster and could benefit from the sort of mosaic-tile approach we applied in these projects.

## Immersible Art

Whatever the setting, we're challenged to create mosaics that meet clients' desires, but because true mosaic design is relatively unfamiliar to many, we often find ourselves in the role of educators who expand clients' and designers' understanding of what can be done and help them "see" aesthetic possibilities they might never have considered before.

Our job in these cases is two-fold: We always want to lead our clients to consider aesthetic touches that no one else has; at the same time, we're evoking images and associations that are surprisingly familiar to most people. This duality is particularly present in our work on pools, spas and fountains: Simply put, it's a natural connection.

Indeed, tile mosaics are phenomenally compatible with aquatic environments of all kinds. What we've found is that as watershapes have become more integrated into their surrounding environments, designers are using mosaics as a common thematic element on, say, a kitchen floor or dining-room wall and on the floor of a swimming pool.

Beyond anything we've done since, however, our first steps into watershapes came out of frustration with the state of the art of waterline finishes. To say we found a lack of creativity and imagination is an understatement, and what we



We'd worked on outdoor spaces ever since we started our business in the 1980s, offering details as simple as backsplashes for outdoor kitchens and as elaborate as fireplace surrounds and deck surfaces.



found is that simply offering designers an alternative was more than enough to get us started.

Our work at the waterline almost immediately led to mosaics that encompassed part or all of the interior surfaces of pools, spas and fountains – and this is where things truly opened up creatively. Now we see projects that follow in the traditions of Roman and Islamic baths for which entire vessels (and sometimes their surroundings) become wonderfully broad canvasses for our work.

In addition to a great many projects that use classical designs, we've also done mosaics that reach into the modern era and have distinctive modern looks – for example, Art Deco imagery. We've gotten into underwater scenes as well, populating walls and floors with fish and other aquatic creatures. It's wide open creative territory, and designers are responding by guiding us in new and exciting directions.

Swimming pools in particular have become ready showcases for works of mosaic art that exploit the fact that they exist underwater, where the refraction of light and the sense of motion imparted at the surface make the mosaics come to life in rare and wonderful dances. These installations also tend to be large, giving us big areas to work with and much to accomplish in visual terms.

The material we use is always extremely durable when exposed to water, so we don't worry too much about longevity, but we've found that when a piece is designed to exist underwater, it usually requires the use of stronger, vivid and more contrasting colors so the work is more readable from above the water's surface.

## Fun and Fascination

When we work on pools, we always start by considering them to be something more than mere bodies of water

Our approaches to fountains have run the complete range from formal simplicity to wild whimsicality, but lots of our designs relate to classic decorative forms – geometric patterns, floral swags and aquatic scenes touching every available surface.



Installation of mosaic panels follows the pattern of most materials applied to cementitious surfaces, the main (and most obvious) distinction being that there are more grouted joints because of the small sizes of the mosaic pieces.



meant for swimming. After all, even if a pool receives regular use, the vast majority of the time it functions strictly as a visual element – a reflecting pool perhaps, or a fountain basin or classic “bath.”

We take advantage of this “other” nature to create floral patterns or floating water lilies at the waterline and strive to conjure images that make the vessel look as though it’s been in place through the centuries. And of course there’s the fact that no two pieces of stone or tile are ever exactly the same, so there’s never a sense that our output is canned or pre-packaged: Instead, what we offer is handcrafted, original art.

To illustrate, we recently completed a project in south-

ern California in which the client had built a decorative version of a Roman aqueduct in conjunction with a swimming pool. In this case, we used tile and shattered stone to create a sense of antiquity – a wonderful effect.

I’d argue that even just a few short years ago, you would not see have seen homeowners going to such extremes in capturing “classic scenes” in their backyards, but these days, this sort of open-minded, ambitious design is becoming more and more common – and tile mosaics are a perfect partner in catching that sort of creative wave.

The uniqueness of these projects has made us extremely adept at interacting with our dealers and their clients. We’ll take photographs of the spaces or, better yet, detailed renderings that cue us into colors, styles, forms and the overall scope and scale of the proposals.



A close look reveals both the intricacy of the patterns we apply as well as the rich variety of colors we use to make visual impressions. And the color palette can get fairly vivid on pool bottoms as we seek to make those impressions through many feet of water.



Playing off those cues, we'll generally pick up colors or shapes or themes found elsewhere and set up mosaics in ways that unify spaces and harmonize with overall designs.

And because what we do is tactile as well as visual, we will often develop sample sections that clients and their designers can place underwater to get a sense of how things might look. In fact, this is almost always an important step, because water is a transforming medium and distorts the appearance of any mosaic in the abovementioned dance of light and motion: It's as if the pieces come to life when submerged in water.

## Collaborations

Although actually generating our tile mosaics is a painstaking, individual endeavor, we've found through the years that the very best projects we do are those that involve a quality pool designer, landscape architect, architect or interior designer. There are so many fantastic possibilities with tile mosaics that the involvement of other design professionals enables us to focus our efforts



One of the joys of working with tile mosaics is that they are great all-purpose materials, working just as well underwater as they do in open air. We may have started at the waterline, but we've spent our time ever since in working both above and below.



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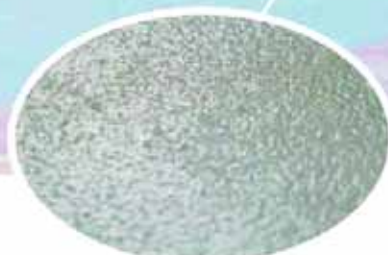
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and work to the highest possible level from the concept stage forward.

What we've found is that when we're brought in early, the mosaic becomes a key element from which other design ideas emerge. In such cases, our work isn't an adornment, but is instead a key driving force for the entire design. Yes, there are still projects where we're taking all of our cues from existing structure and landscapes, but in working closely with design teams, we've found an even greater potential for creating fully integrated spaces – enormously gratifying situations.

These integrated spaces are so satisfying because they hearken back to the classics we studied in school and to spaces more than 2,000 years old in which the flow from interior to exterior, from horizontal to vertical, from public to private was much freer and more open. To us, this is where we come closest to design ideals established long ago and far away – and offer the best possible tile mosaics to willing designers and clients.

## Desert Renaissance

More than nine years ago, we at Vita Nova were fortunate enough to be called upon to make tile mosaics for the renowned Bellagio Hotel in Las Vegas.

We have executed even more extensive projects in recent years, but the plain fact is that the Bellagio installation redefined the way tile mosaics are used in commercial settings. To the best of our knowledge, this was the first facility to use tile mosaics as a central aesthetic scheme – and we owe it all to owner Steve Wynn's fascination with the Villa d'Este on the shores of Lake Como in Italy.

Our work at Bellagio is a story of ever-expanding responsibility: We started with the hotel's large conservatory/atrium area, where the architects wanted to create a tiled path winding through art exhibits, water features and garden areas. We suggested incorporating vines and flowers into the mosaic to link the path to its surroundings, and the rest is history: From there, our work expanded to include mosaics for a wide range of areas throughout the hotel.

At the time, we were fairly certain it was the largest-ever use of mosaics in a hotel in the United States, and it's a signature detail that has always set the property apart *inside* in the same way the famous dancing water fountain works on the outside.

Bellagio's owner called on us again in 2005 to create something new and exciting for his new Wynn Hotel, where we created thousands of feet of brightly colored flowers inlaid into waterjet-cut marble slabs to add visual punch that flowed with the hotel's other visual themes.

– R.G.



When water is introduced to watershapes in which our mosaics have been installed, our work takes on a special quality as the patterns and images we've established dance and dart beneath the surface. It's painstaking work, but it's a look that has withstood the test of time and has delighted clients for more than 2,000 years.







# VINYL LINES

By  
Michael  
Truehart

Long considered to be strictly a prefabricated, off-the-shelf item, swimming pools made with vinyl liners have come a long way in recent years. In fact, says Michael Truehart, he's among a growing cadre of builders working on 'custom vinyl' vessels that encompass a broad range of features commonly associated only with custom concrete structures. The result is a new breed of watershapes – and watershapers who are redefining the way they work.

It's no secret among those who've been in my segment of the watershaping industry as long as I have that vinyl-liner pools weren't as attractive as their gunite counterparts in the old days: The finishes weren't very interesting, options in colors and patterns were limited, the only type of coping we used was made of aluminum and most liners were only available in rectangular configurations in a limited number of standard sizes.

Despite those shortcomings, however, vinyl pools caught on, and in a big way, and I have watched every stage of that development for the more than three decades I've been in the vinyl business. (My company, True Blue Swimming Pools of Northport, N.Y., has been in business for 16 years.)

These pools became particularly popular in the northeastern United States, where freeze-thaw conditions and a host of specific market factors made these comparatively inexpensive vessels quite popular. But even with widespread use,

for many years there were few advances in shapes or looks, and these pools simply did not provide customers with much by way of design options. Indeed, for most of my time in business, we'd cede true custom work to gunite or shotcrete builders.

In recent years, however, all this has changed. With the advent of computer-aided drafting technology and computer-driven manufacturing techniques as well as advances in the ways steps, benches and spas are made, vinyl-liner pools can now be made with virtually the same level of design flexibility as concrete watershapes. They are still seen as an affordable alternative, but there's no question that the vinyl industry has been bringing custom aesthetics and custom quality to a broader range of clients in the past few years.

## BREAKING OUT

No matter where these pools are being built, there's been a recent explosion

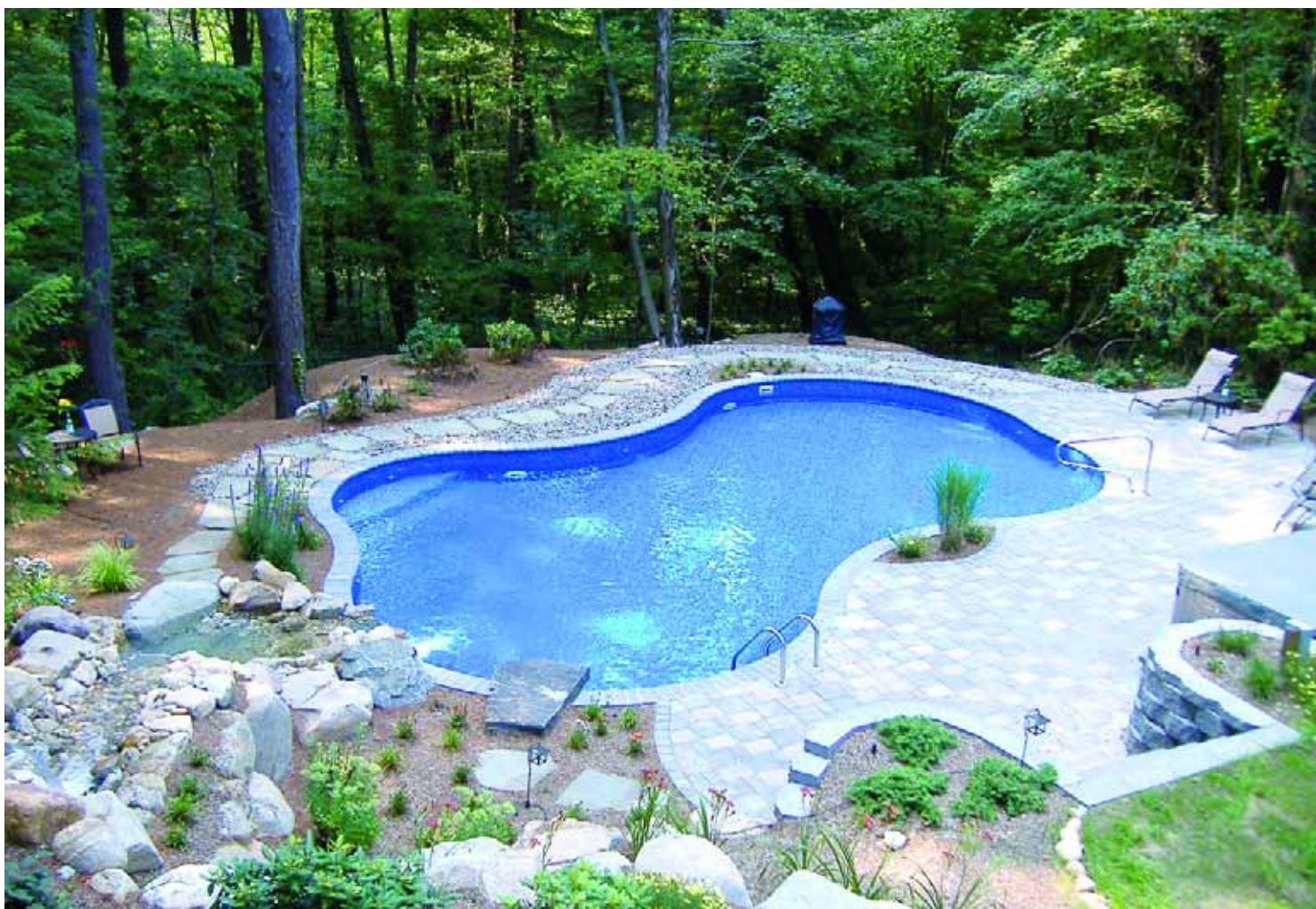
of creativity in vinyl-liner projects. In fact, we're now seeing far more high-end clients opting for vinyl with the thought in mind that they can get more for themselves in the surrounding environment than they could otherwise. This has lessened the sense that these pools are somehow "inferior" to concrete vessels.

It's come so far that I'd estimate that only 25 percent of our prospective clients harbor the old idea that ours is not only a less expensive but also a far more limited option. It's actually great fun to disabuse these people of that notion by showing them our portfolio, which is now filled with projects that are hard to distinguish visually from gunite or shotcrete installations. Across the boards, the expansion of design options enables us to generate more excitement about what we've done, and it has completely transformed the way we talk about our work with new contacts.

Years ago, it was common to encounter new clients who would show us photographs of things they wanted in their pools. All too often, I had the unhappy duty of telling them that many of the options they wanted simply weren't available with vinyl pools. Today,



Using the full potential of available technology, we approach the design task for our vinyl-liner pools, spas and waterfeatures with a fully custom attitude: We are limited only by imaginations in conforming to our clients' wishes, the setting and the extent of the budget and respond by developing unique shapes, using great materials and creating outdoor environments that please the eye and feel as though they truly belong.



however, that rarely happens. In fact, the only feature I can think of that we can't match is the beach entry, simply because vinyl still requires an edge with a track. Even in those situations, however, we're able to provide a modified step detail that comes very close to a beach entry in appearance and function.

The key, of course, is that vinyl liners can now be made in just about any shape and size. We provide exact, precise measurements and dimensions to our suppliers and they're able to supply exactly what we need in rapid order – usually within three weeks but often more quickly than that. We're also able to obtain vinyl with internal contours to cover steps, thereby eliminating the fiberglass units that stood out so prominently and giving us far greater latitude in developing highly detailed shapes for spas.

Although literally every aspect of vinyl pools has been dramatically improved in recent years, the basic, governing concept has remained relatively unchanged. For those who are unfamiliar with vinyl-liner pools and spas, they've always involved installation of a system of solid walls with a narrow track on top. That track has a groove into which we snap the "bead" of a liner that hangs over the walls and contours of the vessel's interior.

Once installed, the weight of the water presses the liner against the walls and the bottom, creating a smooth, uniform, finished surface.

## WALL WORKS

There are two basic ways to build walls for vinyl-lined pools and spas: with manufactured forms and poured-in-place concrete or with galvanized steel or polymer wall systems. We've used both – and they work beautifully – but our current preference is for

using the concrete system, which at this time offers greater structural strength and flexibility in the shapes we can achieve. (I'll stick with that option for purposes of this discussion.)

Although the forms are manufactured, they are now available in a range of shapes and radii that can be combined to create an endless range of shapes. Our forms – three feet wide by four feet tall and made of aluminum – give us a smooth finish and can be ordered in straight sections or curves. By combining different radii and these narrow-width forms, we can create an endless range of shapes.

The walls in these cases are poured-in-place concrete reinforced with rebar in the same way as is done with gunite or shotcrete pools. The walls are eight to ten inches thick and are engineered to withstand most soil conditions.

On site, we over-excavate the pool and set the forms up as freestanding walls, then backfill the area behind the walls once the forms have been stripped. The bottoms we install are almost all made of sand, which creates a small amount of "give" in the surface that our clients say they like and also constitutes a major cost saving. The sand is tamped and trowel-finished to create a smooth uniform surface. (In some cases, particularly in situations with unusually high water tables, we'll install an unreinforced concrete bottom that adds enough weight to counteract the hydrostatic pressure of the water surrounding the pool.)

A key distinction of these pools compared to gunite or shotcrete is that, where hydrostatic pressure can spell disaster for concrete vessels by floating them out of the ground when they're drained under the wrong conditions, it's not an issue with a vinyl-liner pool. It *does* make a huge mess, but the entire structure never floats: Only the liner does, so reinstallation simply means evacuating the water and reinstalling the liner.

That doesn't happen very often, but when it does, the homeowner is looking at the cost of a big clean up and minor repair job rather than complete reconstruction of the backyard.

As mentioned just above, the walls in all vinyl-liner pools are free-standing, which means that raising the edge of a pool above grade or working on a hillside with an exposed wall or even a vanishing-edge detail does not pose a separate engineering challenge. In other words, the



structures are essentially independent of the surrounding earth (or the lack of it).

## COVERING UP

Unless we're installing a liner with a standard size and shape, we take our measurements for the liner size and shape *after* we've installed the forms. It's a painstaking process that sometimes requires dozens of individual measurements – whatever it takes to give the liner supplier enough reference points to get the liner just right.

With that order placed, we'll go ahead and finish the pool by setting the plumbing and electrical lines and installing the equipment pad – basically anything that's left to do other than actually installing the liner.

These liners are heavy affairs, available in thicknesses ranging from 20 to 30 mils. The thicker liners are somewhat more puncture resistant, but we found that 20-mil liners are sufficient for the vast majority of applications – that is, except in cases where the client lets us know that the pool is likely to see rough play or usage by pets, in which cases we encourage them to go with the thicker material.

When punctures do occur, the kits used to patch holes nowadays enable repair technicians to make patches that are as strong as the original material and blend in seamlessly with the appearance. Moreover, liners have come a long way with respect to resistance both to ultraviolet radiation and harsh chemicals.

With all that durability, it's common to see liners



## Market Mysteries

I'm not entirely sure why vinyl pools are so closely associated with the northeastern United States.

True, there's a concern that concrete structures are subject to failure in colder climate, but there have always been gunite and shotcrete pools in the northeast and, when properly installed and maintained, they do just fine. Or maybe it's a cost thing and the fact that in our area vinyl-liner pools cost an average of 30 to 40 percent less than their gunite counterparts. But price-sensitive consumers certainly live beyond the northeast, so that doesn't completely explain the regional phenomenon, either.

In fact, we know that there are builders in some Sunbelt regions who manage to provide concrete pools at prices comparable to vinyl, and it's no secret that those "bargains" also come with all sorts of quality concerns that dog inexpensive gunite structures. In that light, if price was the sole concern, vinyl should've caught on in a big way as a cost-saving option coast to coast – something that hasn't really happened.

In our business, one of the main comments we hear is that our clients don't like the way cementitious finishes feel on their

feet. It's no secret that in plaster or pebble-finished pools (especially those that aren't particularly well maintained), people complain about scrapes and irritation from rough surfaces. But again, it's laughable to think that people in the northeast have more sensitive feet than do people in other parts of the country, so this is no solution to the mystery.

While nobody seems to know with certainty why vinyl has always had such a strong regional association, there's no question it does and likely always will. These days, however, we do know that the affordability of vinyl, combined with its newfound design flexibility, leaves more money in clients' budgets for added features – attached spas, vanishing edges, ancillary waterfeatures, quality decking, fine peripheral hardscape materials, outdoor kitchens and more.

Whatever the regional issues, new developments in vinyl-liner pools have given us much more latitude when it comes to creating fully integrated backyards – and that, in my book, is a good thing indeed.

–M.T.



Some of our most engaging work carries vinyl-liner pools into the realm of naturalistic watershaping. True, the liner's bead is a visual presence, but when we succeed in delivering this much visual interest and variety above and beyond the waterline, the irregularity soon fades from our clients' field of view.

last upwards of 15 years, which is certainly comparable to plaster or pebble finishes. In fact, only tile surfaces – which last indefinitely but cost ten times or more what a liner does – are more durable.

There's a nice flexibility factor, too: We've run into clients who will change their liners simply because they want a different look. And no matter whether they're changing it because it's worn out or just because they crave a fresh look, replacing a liner is a simple and affordable process – certainly much less involved, costly and messy than refinishing a cementitious finish.

Liners are installed as they always have been, simply by unpacking and unfolding the sheet in the pool bottom and snapping its "bead" into a track. In most cases, we protect the sand bottoms of our vessels from indentations by working from the top.

## GOING CUSTOM

With the new complexity that attends some of our work – including waterfalls, grottos and rockwork edges – we've seen the need to get creative in our approaches to hanging liners while protecting the pool's floor. In some cases, for instance, we've had to hang

## A New Shape

With the advent of liners that can fit over steps and benches, our firm has taken to building vinyl-liner spas attached to pools or as stand-alone systems.

As described in the accompanying text, the increasing flexibility we're seeing in pre-fabricated forms and poured-concrete structures has been augmented by advances in liner technology that have made them more durable in the face of chemical treatment, the corrosive effects of which can be magnified in spa systems.

These developments have opened up discussions with clients about how they use their spas, and in these conversations we've found a growing number of people who want a body of water that enables them both to exercise and enjoy the relaxing benefits of hydrotherapy. To accommodate those needs, we've developed a hybrid vessel we call a "spool": It's either an oversized spa or a smaller-scale swimming pool with hydrotherapy jets, and all of them seem to be landing in the 15-by-20 foot size neighborhood.

In many cases, our spools have one end that's five- to five-and-a-half-feet deep, which enables our clients to stand up and engage in water exercises. In other systems, we've installed swim-jets that enable clients to swim in place. With this sort of multi-faceted functionality, these vessels offer a great deal of enjoyment and healthful use at a cost that would be hard to approach in gunite or shotcrete.

– M.T.



an installer over the edge by his feet to snap the liner into place. But even in the most complex and sizable of installations, the process of installing a liner seldom takes more than a few hours.

There is a bit of stretching involved, of course, which helps us achieve a tight fit over the internal contours of the pool or spa. How far a liner will stretch is dependent upon the temperature at time of installation. This is why manufacturers now provide “summer” or “winter” cuts for their liners, with the winter sizing being a few fractions of an inch larger because the material will not be as flexible when it’s cold.

Penetration in the liners for suction and return lines, skimmers, lights and hydrotherapy jets are sealed using mechanical gasket systems that essentially sandwich the liner in a compressed, water-tight fitting. There’s no adhesive involved, so that when a liner is replaced, it’s simply a matter of removing the fittings and reusing them. As with all other aspects of liners, these gaskets have come a long way, and we virtually

never have problems with leaks.

Indeed, manufacturers of liners and wall systems have all seen the benefits of working in custom shapes, and in just about all cases we’ve found tremendous flexibility and willingness on their part to try new things in ways that make the entire process both innovative and exciting.

The best thing about this progress is that companies like ours – that is, companies that see value in being able to deliver clients exactly what they want and in bringing a true spirit of creativity to the process – are now working as members of teams that include architects, landscape architects and other design professionals. We’re called on to answer questions about what we can achieve using liners and often make aesthetic recommendations about greater design schemes.

From start to finish, we’re finding that the words “custom” and “vinyl liners” are no longer mutually exclusive. We feel we’ve joined the greater watershaping world in terms of providing products that are closely suited to client needs and personalities as well as the requirements of the overall setting.

It’s been a long time coming, but these steps up in quality and aesthetic potential will surely define our future as members of the watershaping industry.



We've had some of our greatest 'customizing' success in cases where we've incorporated high-end touches including sculpted spillways, deck jets and other fountain features into our visual compositions. This layering of elevations, coupled with the use of high-quality stone, the latest modern amenities and well-considered plantings, has enabled us to please our clients and raise the bar when it comes to vinyl-liner pool design in our marketplace.

## Prints and Patterns

Back when vinyl liners were new, there wasn't much to choose from by way of appearance. Not only did they come in a limited array of sizes, but the first liners I saw 30-plus years ago were all blue – and pretty much the same *shade* of blue at that.

Those products were essentially retail items that were available as boxes sitting on shelves, and it's been fascinating through the years to watch the situation change.

The next step after the blue was a variety of pebble patterns, and for a while that's what almost everyone used. This development opened the door, and a much wider array of patterns and colors began to emerge, from speckles, pebbles and geometric patterns to aquatic scenes and tile reproduction. There are now almost too many choices, so much so that clients have a hard time deciding what they want.

The colors manufacturers are now using don't exactly align with colored plaster or pebbles, but they do provide roughly the same sets of options when it comes to teals, earth tones and grays. There are also extremely dark colors that enable us to create "black-bottomed" pools and spas, and there are some liners that have reflective white highlights that make them shimmer underwater.

Looks come and go, of course, and it's possible for some of us who've been at it for a while to judge a pool's age by its liner. For a time, printed faux tile bands at the waterline were extremely popular, for instance, but those days seem to have passed.

What's great about the current market situation is that manufacturers are becoming more sophisticated and responsive in developing the colors and patterns they offer. When you combine vinyl options with advancements in shapes and contours, these pools and spas are becoming increasingly "custom" in every sense of the word.

– M.T.

## ACRYLIC CONCRETE COLORS

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**SPECIALTY CONCRETE PRODUCTS** offers Stone Shade Acrylic Color Dispersions. These special blends of solvent, acrylic resins and other ingredients add vivid color details to stamped, textured and acid-stained concrete surfaces and are available in 17 standard colors as well as four premium colors. The product can also be used to refurbish old stamped-concrete surfaces. **Specialty Concrete Products**, Columbia, SC.

## AUTOMATIC POOL COVERS

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**COVER-POOLS** has published literature on its line of automatic pool covers. The 24-page, full-color brochure discusses safety and efficiency features as well as a design flexibility that allows for covering pools of just about any shape or size and the availability of custom products for special projects. It also covers various track systems and cover-hiding options as well as control systems. **Cover-Pools**, Salt Lake City, UT.



## POOL/SPA LIGHTING

### Circle 137 on Reader Service Card



**SUPER VISION INT'L** has published a catalog on its line of lighting products. The 76-page booklet covers underwater lighting for spas and pools, landscape and deck lighting, perimeter and step lighting, systems for waterfeatures and waterfalls and more. Highlights include X-Stream Universal LED modules for lighting laminar jets with a wide array of colors and special lighting effects. **Super Vision Int'l**, Orlando, FL.

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Continued on page 68

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**HADDONSTONE** offers the Bayeux Fountain. Inspired by Romanesque architecture, this double-tiered, freestanding waterfeature has leaf moldings on the fountain bowls, with slender columns acting as supports. It is also self-circulating, so it does not require a constant supply of fresh water – ideal for areas in which water is at a premium – and stands 60 inches tall with a 37-inch diameter. **Haddonstone**, Bellmawr, NJ.

## HISTORIC COBBLESTONE

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**MONARCH STONE INTERNATIONAL** imports authentic, antique cobblestone and curbing from Europe for commercial and residential applications in driveways and walkways as well as in interior or exterior flooring or walls. The material is reclaimed in its full original height, and six sizes are available, including squares from 3 to 7 inches and 4-by-6- and 5-by-8-inch rectangles. **Monarch Stone International**, San Clemente, CA.

## POOL ACCENTS

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**ARIZONA HOT DOTS** has published a 12-page brochure on glass and tile accent pieces for use in pools, spas and other waterfeatures. The pieces are available in dichroic glass in four colors; kiln-fired immersion glass in more than 50 colors and appearance options and sizes up to six inches square; and in porcelain in six earth-tone colors. Above-water accents in bronze are also available. **Arizona Hot Dots**, Scottsdale, AZ.

## POOL/SPA CATALOG

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**INTERMATIC** has released a new pool/spa product catalog. The 86-page booklet showcases all available products and accessories, including new products such as the I-Pure salt chlorine generator, various wireless controls and more. It also includes exploded views and replacement parts breakdowns for all products, along with wiring diagrams and application examples for all digital-style controls. **Intermatic**, Spring Grove, IL.

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**MISTY MOUNTAIN** offers contractor-grade, extra-duty pond filter/skimmers in 14- and 19-inch boxes. The units' Venturi design super-oxygenates the water for greater biological efficiency, and the filters contain either one or two thick pads (the equivalent of five inches of gravel) to provide non-clogging mechanical filtration. They also feature gate valves for easy clearance of settled debris. **Misty Mountain**, Young Harris, GA.

## HYDRAULIC HAMMER

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**CATERPILLAR** has introduced the H65Ds Hydraulic Hammer for use with compact equipment. Features include a simplified design for low owning/operating costs along with maximum performance, productivity, reliability and durability. An enclosed housing protects the power cell and reduces noise levels, and there's an ultra-high blow rate for greater productivity with concrete and asphalt. **Caterpillar**, Peoria, IL.

## LARGE RETAINING WALLS

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**KEYSTONE RETAINING WALL SYSTEMS** has introduced the 133Elite wall system. The blocks' 8-by-24-inch faces create a larger-scale look while reducing the number of units required to do the job. In addition, the company's StoneArt embossing technology produces units with specially designed natural textures in combination with a wide variety of colors. **Keystone Retaining Wall Systems**, Minneapolis, MN.

## POLISHING TOOLS

### Circle 146 on Reader Service Card



**CL INDUSTRIES** offers Triton, a water-driven polishing tool for use on marble-, quartz- or pebble-based finishes. Water continuously washes the surface clear of dust and debris, extending abrasive life, reducing overspray and keeping the operator dry. It comes complete with a trigger gun, a 45-degree brass elbow and an adjustable side handle and can quickly be converted to an upright polishing tool. **CL Industries**, Orlando, FL.

Continued on page 70

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## POLAR-BEAR SLIDE

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**NATURAL STRUCTURES** offers its Polar Bear Slide in two models – a smaller version with a seven-foot run and a larger version with a ten-foot run. Featuring all-fiberglass construction with safe, gently rounded edges, non-slip step surfaces, grounded stainless steel handrails and a hollow, lightweight body, the slide can run either wet or dry with easy plumbing connections. **Natural Structures**, Baker City, OR.

## SPA CASCADES

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**WATERWAY** offers Cascades to enhance spa environments in refreshing and creative ways. The design allows for quick and easy installation with perfect seals and built-in diffusers. Units are available in three different sizes – 3-1/2, 6-1/2 and 8-1/2 inches – and are compact enough to fit just about anywhere in a spa. They can also be illuminated using either fiberoptic or LED lighting. **Waterway**, Oxnard, CA.

## REBAR CUTTERS

Circle 148 on Reader Service Card



**FASCUT INDUSTRIES** offers the Lobster line of handheld rebar cutters. Available in both corded 110-volt and cordless rechargeable 12-volt models, all units feature a cutting head that can be rotated up, down or sideways for quick cutting of bars in different positions and locations. The company also offers larger, heavy-duty tabletop models that both cut and bend rebar in sizes up to #8. **Fascut Industries**, Sauk City, WI.

## PEST REPELLENT

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**INTERNATIONAL POND SUPPLY** offers a natural, non-toxic solution to animal-intrusion problems with All-Natural Deer Repellent. Small bags of the powerful repellent (which includes cloves) are hung around gardens in trees, planting beds or blooming shrubs and keep deer, mice, rabbits, opossums, elks and moose away from their favorite plants for up to six months. **International Pond Supply**, Santa Fe, NM.

Continued on page 74

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## COMPOSITE-WOOD PLANKS

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**TIMBERTECH** has introduced DockSider planks for water-intense environments – docks, marinas, boardwalks and pool decks. Made from high-quality wood flours and pure plastic resins, the wood substitute offers a skid-free, splinter-free surface and requires no routine maintenance – no painting, staining or sealing. It also resists fading, weathering, rotting and warping to look new, year after year. **TimberTech**, Wilmington, OH.

## TRENCH DRAINS

Circle 152 on Reader Service Card



**ZURN** offers the Model Z880 Flo-Thru trench-drain system. Designed for residential pool applications, the product comes with standard, heel-proof polyethylene grates in four colors (brick red, blue, sand and white) and is also available with stainless steel, bronze or aluminum grates. Accessories include 90- and 45-degree transitions, bottom and end outlets and end caps. **Zurn**, Falconer, NY.

## WIRELESS GATE ALARM

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**TERRAPIN COMMUNICATIONS** offers the Safety Turtle wireless gate alarm to provide two layers of child protection. A base station sounds off if a child manages to open the gate or if the gate fails to latch within 11 seconds of adult entry – and also if a child wearing a system wristband goes in the water. The adult bypass switch means the alarm never has to be disarmed. **Terrapin Communications**, Ottawa, Ontario, Canada.

## OUTDOOR LIGHTING

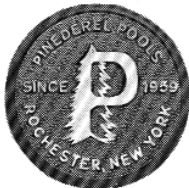
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**SAVIO ENGINEERING** has introduced the Radiance outdoor lighting system, a line of rugged, low-voltage LED and halogen fixtures for use as accents in or out of the water. Ideal for waterfalls and semi-aqueous environments, the energy-efficient LED lights emit almost no heat and deliver bright light for extended periods, while the submersible halogen lights offer greater intensity. **Savio Engineering**, Santa Fe, NM.

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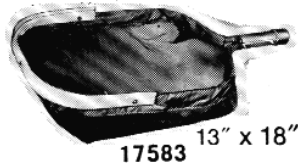
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# WATER SHAPES

## POOL BENCHES

### Circle 155 on Reader Service Card



CARDINAL POOL SYSTEMS offers a new, drop-in steel bench for inground vinyl-liner pools. Designed to upgrade any inground pool with a comfortable, built-in seating area, the bench can be customized to fit any shape of pool and can be

made as large or as small as the builder or architect specifies. It can be radiused and can even have additional raised seating areas.

Cardinal Pool Systems, Schuylkill Haven, PA.

## KOI-POND SYSTEMS

### Circle 156 on Reader Service Card

SACRAMENTO KOI offers the Advantage Koi Pond System to take the guesswork out of koi-pond design. The five ponds in the series range from 1,500 to 5,000 gallons and are designed for excellent water quality and easy maintenance. Each kit includes a filter, a pump, bottom drains, oxygenating jets, a skimmer, an auto-fill device, valves, a collector/pre-filter box and a UV sterilizer system. Sacramento Koi, Granite Bay, CA.



## MINI SKID-STEER

### Circle 157 on Reader Service Card



DITCH WITCH offers model SK500, a track-mounted, walk-along mini skid-steer with a 500-pound lift capacity. Designed for easy operator interface, the 36-inch-wide unit has four levers that run all functions and an independent hydraulic circuit that helps it turn tightly for increased job-site mobility and access.

Its undercarriage also has long tracks and high ground clearance for stability and agility. Ditch Witch, Perry, OK.

## FOG SYSTEMS FOR POOLS

### Circle 158 on Reader Service Card

FOGCO offers the FogDeck Kit to accompany swimming pools. Designed for installation during the construction of the pool, the system establishes a recessed fog line on the leading edge of a concrete deck. Fog emits from the high-pressure nozzles and rolls across the surface of the water, creating an ever-changing scene while gently lowering ambient temperatures in and around the pool. Fogco, Gilbert, AZ.



Continued on page 76

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## SMALL OZONE GENERATORS

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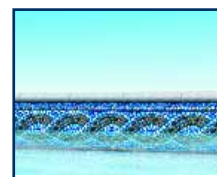


**CLEARWATER TECH** offers the Micro Series of corona-discharge ozone generators. Designed for compact size and superior ozone delivery, the three models – one with a fixed 100 mg/hr output, one with fully adjustable output to 300 mg/hr and one with a fixed 300 mg/hr output and a built-in air pump and timer – are for use in residential spas and small aquariums. **ClearWater Tech**, San Luis Obispo, CA.

## FADE-RESISTANT VINYL LINERS

Circle 160 on Reader Service Card

**HPG INTERNATIONAL** has introduced Indurance, a fade-resistant vinyl material for swimming pools. The product features a new vinyl formulation designed to resist fading caused by chemicals and the ultraviolet rays of the sun. Available in a variety of patterns printed on light blue, standard blue and white-based material, the product is provided to installers through pool-liner fabricators. **HPG International**, Mountaintop, PA.



## FOUNTAIN KIT

Circle 161 on Reader Service Card



**CAL PUMP** has introduced the RingJet Fountain Kit. Designed for beautiful visual effects with ponds and watergardens, the fountain streams add soothing sounds while providing valuable aeration for healthier ponds. The ring includes 21 jet nozzles and attaches directly to a pump, and an optional fountain head can be attached to the center of the ring for an enhanced water display. **Cal Pump**, Valencia, CA.

## COLOR GRATING

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**RENOSYS** offers DuraTech PVC interlocking gratings. Designed for gutter, trench or drain applications with new-pool construction as well as renovations, the product has a slip-resistant surface, is up to 25 percent thicker than other PVC gratings and is made with UV- and color-stabilized, 100-percent virgin PVC that comes in a complete rainbow of colors that can be mixed and matched. **RenoSys**, Indianapolis, IN.



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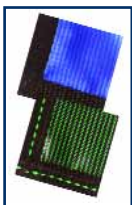


**MODERN POOL SYSTEMS** offers a track system designed for the vinyl-liner pool builder

who prefers to install the liner before backfilling walls and pouring decks. The top-receiver track locks the cantilever deck form in place with key locks, while the bottom-receiver track is for the pool liner's bead. The back of the track also has a vertical lip that helps lock the pool wall into the deck. **Modern Pool Systems**, Columbus, MS.

## SAFETY POOL COVERS

### Circle 164 on Reader Service Card



**GARRETT COVERS** offers safety pool covers in either solid polyester-reinforced vinyl or polypropylene mesh. Designed to keep leaves and other debris out of the pool through fall and winter, the covers also provide a tamper-resistant barrier that

protects children, pets and wildlife. Each fabric contains inhibitors to prevent damage that might be caused by harsh weather or the sun's rays. **Garrett Covers**, Fallsington, PA.

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## Use the Reader Service Card!

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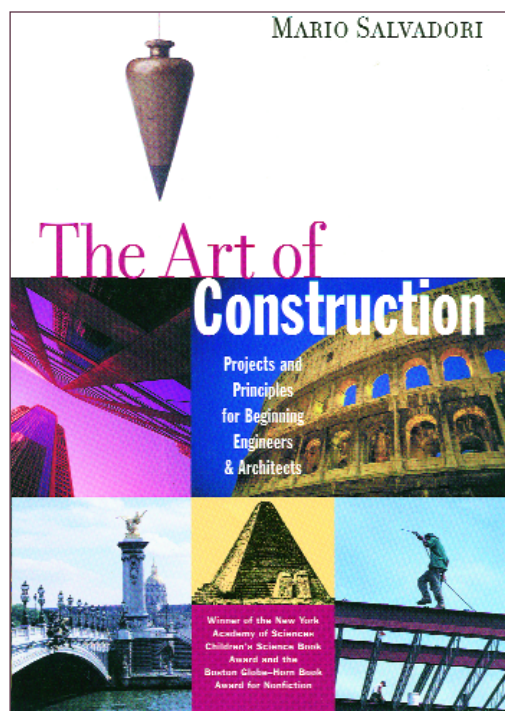
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By Mike Farley

# Artful Engineering



Most watershapers know that the work we do requires knowledge across a wide range of disciplines – a cluster of skills that includes, among others, geology, materials science, structural engineering, construction techniques, hydraulics, architecture, art history, color theory, drafting and more.

As jacks of all trades, we don't really need to be "expert" on all of these fronts, but without a working knowledge of the technical and aesthetic disciplines involved in creating quality work, it's difficult to ensure the success of any given project.

There's no question that some of us are better at certain disciplines than others, and it's up to us to recognize our strengths and weaknesses and fill in the gaps of our understanding as best we can. When it comes to structural engineering, for example, few of us qualify as *bona fide* engineers: That takes years of schooling and rigorous licensing processes. But almost all of us *work with* precise structural designs that are specific to the vessels and associated structures we design and/or build.

In other words, we may not be engineers, but we sure as heck need to know a thing or two about how structures work. That's why I recently picked up a copy of *The Art of Construction: Projects and Principles for Beginning Engineers and Architects* by Mario Salvadori (Chicago Review Press, 1990). This 150-page text provides some of the clearest explanations and illustrations of the way structures work that I've ever seen.

Salvadori approaches his subject by explaining, in the most straightforward language possible, the basic principles of structural design – and then offers simple illustrations to back them up. Other texts (and I've seen a lot of them, believe me) do the same thing, but what's interesting and different about Salvadori's text compared to others is that the drawings are all about simple models you can build in a few minutes – models that demonstrate, in completely understandable ways, why engineers design things the way they do.

Most of these "projects," in fact, are made out of things like popsicle sticks and notebook paper – the sorts of things you might find in an elementary classroom. Through these modest illustrations and examples, Salvadori provides incredibly clear conceptual lessons about important engineering concepts, such as why arches and domes are stable or why an I-beam is stronger than a straight, flat piece of metal or why trusses are so strong.

Everything is aimed at giving the reader a clearer understanding of the stresses that structures must counteract and how, through the ages, engineers have dealt with these fundamental forces.

In the course of the book's 15 chapters, the projects move from the simple to the complex, with each fundamental concept supporting the next. It's an ingenious progression that's easy to follow and, I dare say, fun to pursue and absorb. I'll admit that until I read this, for example, I didn't really understand why an egg is such a stable structure or exactly why tents and roofs are designed the way they are.

The text does not give the reader any sort of formal training in engineering, but it goes a very long way toward developing a helpful understanding of the structures that surround us in our everyday lives. As a watershaper who works with engineers on a steady basis, I know that going through some of Salvadori's exercises has given me an increased appreciation for the engineering challenge as well as a deeper understanding of the important work that engineers do on our behalf – an artful discipline, indeed. **WS**

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