

Inside: Brian Van Bower on Goals

WATER SHAPES

Design • Engineering • Construction

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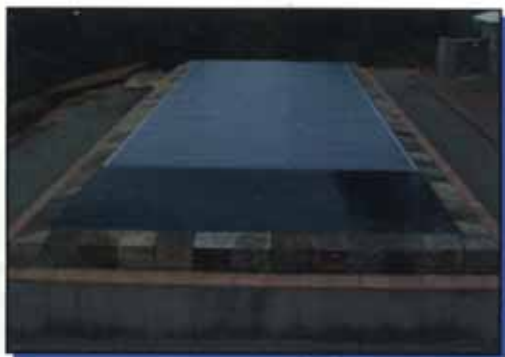


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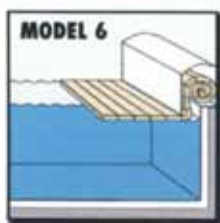
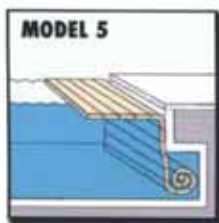
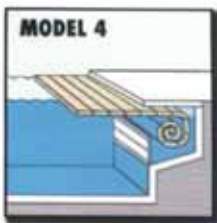
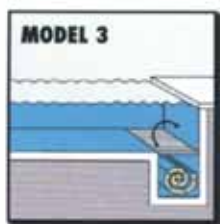
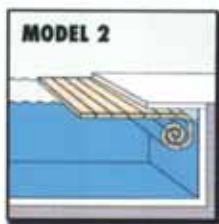
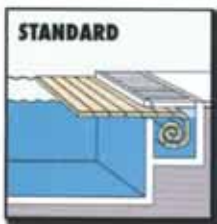


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On the cover:

Photo of Maya Lin's Monroe Center watershape

by Balthazar Korab, courtesy of the Frey Foundation

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Now and Then

Last year at about this time, we ran a sequence of articles on watershapes of historic or monumental importance. These included such spectacular installations as the fountains and pools of Hearst Castle, the ambitious waterfeatures at the Getty Center, the inspiring public fountains of Kansas City and Frank Lloyd Wright's transcendent Fallingwater.

It was a true *tour de force*, and many of you told us that you liked what you saw. Some even went so far as to say that the articles had prompted them to travel to these places for personal, up-close looks at these masterworks of watershaping.

As both a follow-up to that series of articles and as a way to celebrate the conclusion of our fourth year of publication, we thought we'd add another set of entries to our registry of iconic watershaping achievements.

In this issue on page 34, for starters, you'll find a glorious feature on Italy's legendary Villa d'Este by landscape architect Mark Holden. This is the place after which hotelier Steve Wynn patterned Bellagio in Las Vegas, and it's remarkable to see how much a truly beautiful modern hotel pales in comparison to the original.

Located just outside Rome, this 16th-century estate is graced by dozens of watershapes – fountains, ponds and cascades – all originally powered by gravity and head pressure. Despite the technological limitations of the era and decaying effects of the centuries, the watershapes at this wonderful spot are still among the most beautiful and complex ever created. As Holden points out, this is a place that all watershapers should put on their itineraries.

Then we have a feature by fountain expert William Hobbs on his firm's work in support of the designs of Maya Lin, the contemporary genius behind the Vietnam Veterans Memorial in Washington, D.C., and a string of other monumental installations – many of which include dazzling uses of water. In these works, in fact, we see water used as a metaphor of time, change and the sweep of human history – a clear voice in the multi-layered statements she makes in her work.

Personally, I find this combination of articles to be unusually powerful – a genuine declaration of the aesthetic potency of water as a sculptural medium. Although Lin's modernism and the Villa d'Este's classicism are about as far apart as you can get in terms of art history, artistic style and physical scale, these monuments carry profound social and cultural messages through the interplay of art and water.

These deep, artistic resonances and the creative vision of the great watershapers involved in these masterpieces challenge us to meaningful, even spiritual, reflection. At the same time, we all know just how diverting and relaxing it can and should be to spend time in the presence of moving water. In other words, you don't have to be an art historian to appreciate works such as these – but the deeper meanings are certainly there if you're inclined to look for them.

Whether you endeavor on your own to create large public displays or intimate residential environments, it's important to realize that, through the art and craft of watershaping, you are linked to a distinguished creative tradition that reaches back through the centuries – and propels us all into the future.

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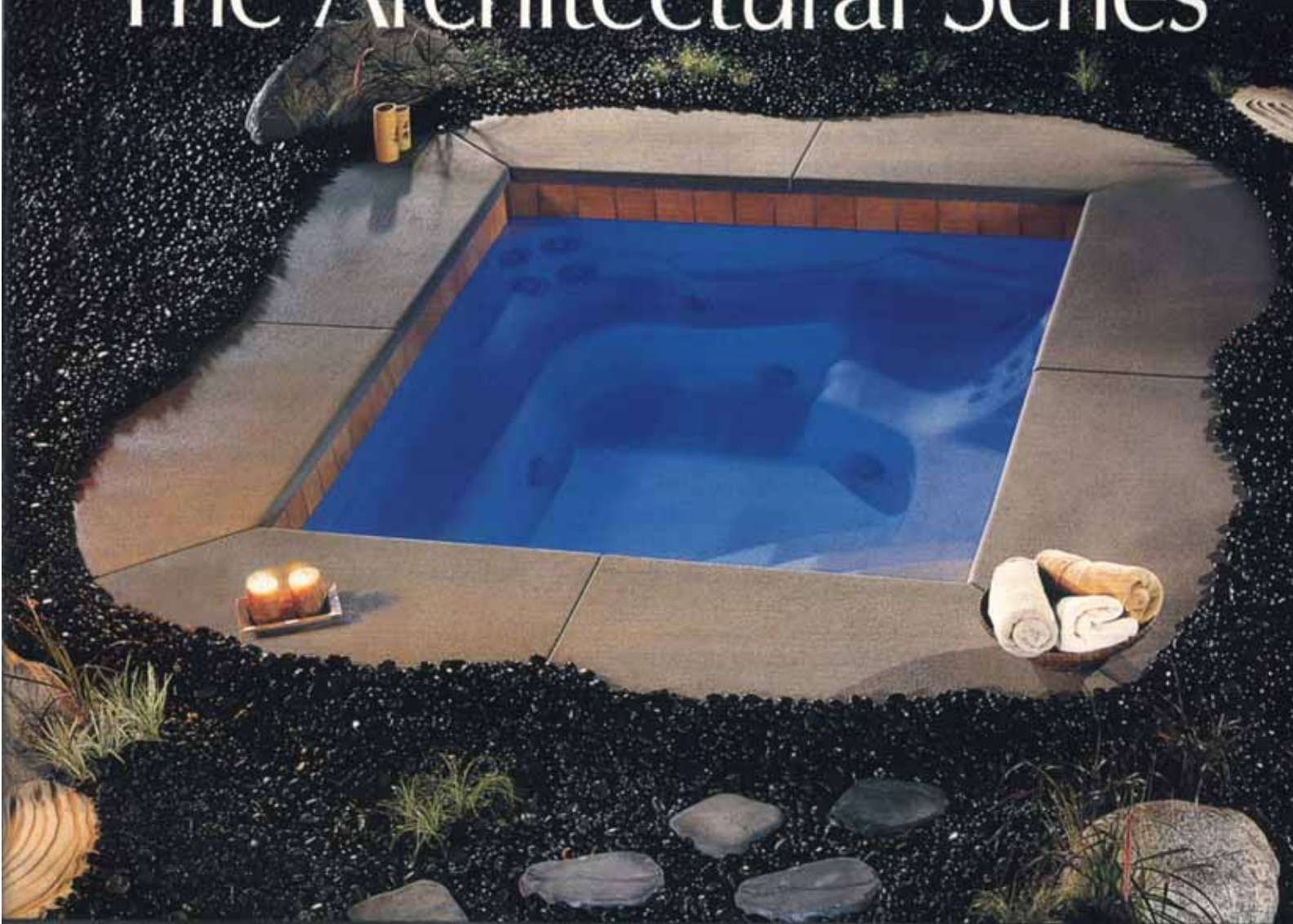
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Mark Holden is a landscape architect, contractor, writer and educator specializing in watershapes and their environments. He has been designing and building for more than 15 years and currently owns several companies – including Earth Patterns and his latest venture, HoldenWater, a water-oriented design/construction firm based in Fullerton, Calif. His businesses combine landscape architecture and pool construction, and he believes firmly that it is important to reach beyond traditional barriers between the two trades and get back to the age of the “master builders” as a means of elevating standards in both. Holden works toward that goal as an instructor for Genesis 3 Design Schools and also teaches at California Polytechnic State University in Pomona as well as other educational institutions.

Rick Anderson has been a specialist in watergardens, streams and ponds for 23 years. After

working for many years in South Carolina and as a consultant for the past year in Nebraska, he recently returned to Ohio, where his watershaping career began. In returning to familiar environs, he says he has been pushed, prodded and inspired to continue exploring new territory when it comes to his unique brand of naturalistic water design. He's active as a designer and consultant and works as the lead designer/builder in stone and water for Lake Cable Nursery in Canton, Ohio. Anderson is currently working toward the reforming of the Whispering Crane Institute, an industry think tank, and can be reached at wcicrane@ssnet.com

Skip Phillips is president of Questar Pools, a high-end swimming pool design-and-build firm based in Escondido, Calif. He started his business in 1975 as a service/supply/repair operation, moving quickly into renovations and



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new construction. Now a veteran designer and builder of high-end, custom swimming pools, Phillips has won more than 100 local, national and international design awards. His reputation is tied closely to hillside pools featuring vanishing-edge designs; he is one of only two U.S. instructors currently teaching classes on vanishing-edge pools and has written and participated in numerous magazine articles on the subject. Phillips is a past president of the National Spa & Pool Institute and is a co-founder of the Genesis 3 Design Group.

William Hobbs, principal of Hobbs Architectural Fountains' design and engineering group, is known for bringing the beauty and motion of water to landmark projects around the world. A veteran participant in national and international architectural design teams, he consults with

architects and designers and offers them innovative approaches to including water in their projects' aesthetic goals. To further this mission, he oversees new-product design and is the author and holder of patents for equipment and spray effects in the architectural fountain industry. He has lectured at the Harvard School of Design and taught seminars for the Construction Specification Institute, the American Institute of Architects and other architectural and landscape groups on the subjects of architectural fountain design and engineering. **Wayne Pierce** has seven years' experience in the design and implementation of waterfeatures in the public and private sectors in both recreational and decorative applications. He has worked directly with William Hobbs for the past four years on custom architectural fountains and in design consulting for interactive waterfeatures.

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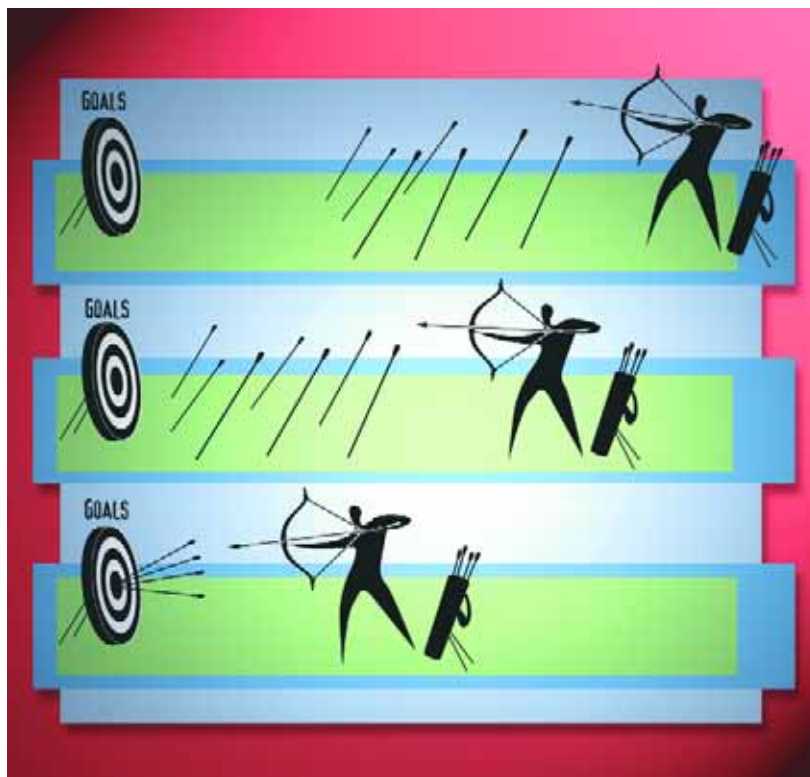
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Ready, Set, Goal

*"Without goals, you become what you were.
With goals, you become what you wish."*

— James Fadiman

As I've grown in my personal life and as a businessperson, I've come to recognize a powerful relationship between basic axioms (such as the one just above from James Fadiman) and the setting of my own goals.

To paraphrase Mr. Webster, an axiom is a self-evident truth or proposition. Many are quite familiar, so much so that phrases including "Honesty is the best policy" or "Nothing ventured, nothing gained" have become ingrained in our minds.

If you approach them the right way, goals can become just as ingrained as these common axioms, especially if we embrace them, internalize them and allow them to inform how we conduct our lives and how we think about what we're doing.

Believe it or not, goals can guide almost everything we do, from how we schedule our time to how we establish our business and personal relationships or determine the things we choose to learn. In other words, when we turn to them as a way of guiding ourselves and as a method of achieving and

Effective goal setting has to do with being able to express your goal concisely in an understandable, plausible way. Yes, almost anything is possible, but without clarity and realism in the planning process, the odds of your getting where you want to be will decrease dramatically.

attaining the things we want, our goals become powerful tools indeed.

A Look in the Mirror

Trouble is, axioms and goals often cut both ways and can open doors for us or, when misapplied or mismanaged, will set limits on what we can accomplish.

Consider the axiom, "Be careful what you wish for." This chestnut points to the fact that when you wish for and attain something, sometimes things do not turn out as you've planned. Unfortunately, there's truth to this saying for a great many people, and I'd like to suggest that we should examine why this is the case.

Personally, I believe that the unintended and often negative consequences of "getting what we want" come from setting goals without thought or at least without *adequate* thought. That's why I believe that any time you're establishing goals, you need to begin that process with a simple question: "Do I really want what I'm seeking?"

That may be an obvious point, but it seems to me that too many of us fail to consider our true desires in setting our minds on specific goals and end up wishing for things we don't really want.

At times, in fact, there almost seems to be an element of predestination in what people pursue. I've often thought this is why so many children of doctors and lawyers become doctors or lawyers: Everyone involved makes assumptions based on life experiences and makes decisions based on a sense of obligation rather than true desires.

In addition and all too often, we see situations

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in which "force of habit" defines how we approach various aspects of our lives – from the big things, such as choosing a career, to the mundane ones, such as deciding what to eat for breakfast.

When it comes to our true desires, these senses of family tradition or force of habit really shouldn't apply. Rather, the important thing is allowing yourself to step

back and question what it is you really want and assess how well your habits serve your efforts to reach those desires.

If this seems overly philosophical, stop and think about how many people you know who don't like what they do for a living. If you've ever found yourself in that situation where each day you face seems like a dreary extension of the one

before it, I trust you came to recognize that you needed to make a change – and set yourself some new goals that better reflect your true desires.

Getting Real

Another difficulty of goals is that nothing about them is automatic or guaranteed. The plain fact, in other words, is that they don't always work and become attainable.

A big part of why that's so is that many people do not take the process far enough and establish specific-enough targets. Some goals, for example, sound very good but don't really support a plan of action. These include some of the classics, such as "Someday I'd like to be rich and fa-

In setting your goals for your business or for personal reasons, if you cannot easily see yourself doing what's needed to achieve your goal, you might need to adjust your thinking.

mous" or "My goal is to find happiness."

Yes, prosperity and happiness are important, but without a foundation of specific, action-related goals, you'll never reach them. They're by-products of good, positive goal setting, not true goals in and of themselves. Another example is health: Often, people will set goals related to losing weight or increasing their energy levels – wonderful ideas, but unattainable without a specific, incremental, goal-oriented game plan.

On a more practical, commercial level, setting a goal of doubling your company's gross or output over a given period of time is meaningless without a specific game plan and subordinate goals that make the main goal workable.

Another key to effective goal setting has to do with being able to express your goal concisely in an understandable, plausible way. Yes, almost anything is possible, but without clarity and realism in the planning process, the odds of your getting where you want to be will decrease dramatically.

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You could, for example, set your sights on becoming a billionaire in a year's time. That might be plausible for a couple of us, but for most of us it's not and represents an unrealistic goal and a pathway to frustration and failure.

More reasonable might be setting your sights on becoming a millionaire in a five-year span. This is something that's actually within reach for a great many people – even people in their twenties who achieve great financial success in short periods of time. In fact, I would argue that setting a goal for financial success or, more important, for finding satisfaction in your work is absolutely reachable by most everyone.

When you settle on a reasonable, reachable goal, a big part of realizing that goal is being able to visualize yourself achieving it. I've had a great deal of experience in public speaking, for example, and have been successful at it for a range of reasons. In this area, I've set myself three specific (and related) goals: I will be entertaining; I will be informative; and I will be engaging. No matter how often I've spoken to groups of people, I still take time to visualize myself being all three in front of an audience.

Fine Tuning

In setting your goals for your business or for personal reasons, if you cannot easily see yourself doing what's needed to achieve your goal, you might need to adjust your thinking.

This doesn't mean abandoning your overall goal – quite the contrary. Instead, all it might mean is that you need to be realistic about your current level of preparedness for success and insert more interim goals for the short term as you pursue the ultimate goal.

As an example, I'm very interested in taking on landscape lighting as an adjunct to my work in designing and building watershapes and have accordingly set it as one of my goals.

My ultimate goal of being a recognized authority on water and surrounding it with lights that accentuate its beauty and the appearance of the landscape around it is off in the distance. For right now, I

have set up interim goals having to do with getting an education in lighting technology, basic electrical engineering and principles of landscape lighting design and application.

As I stand here today, I can't visualize myself specifying a lighting plan for any of the projects I have on the table. What

I *can* visualize is taking classes, reading books, talking with lighting designers and learning as much as possible about everything that goes into the expertise I seek. It's an incremental process, and I'm realistic about what it will take to get what I want.

In "goal clusters" such as my pursuit of



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expertise in landscape lighting, the issue of time frames enters the picture. In many cases, time frames are essential – such as when you know a specific opportunity will become available at a certain time and the only way you can seize it is by being ready at a certain time.

In other cases, however, time frames are limiting and are too often used to avoid

taking action. If, for example, you want to double your output in a five-year span, you might not implement certain key aspects of your plan because your generous timeline doesn't require action just yet.

In my experience, improvement is not something that calls for waiting: If you set a goal of doubling your output with no time frame attached, you don't have

any excuse for procrastinating. I'm not saying you have to become obsessed with achieving your goals immediately: What you need instead is balance and an understanding and awareness of all the factors involved in success.

Facing Limitations

Nothing about this discussion is complicated or particularly difficult, but it's amazing how we human beings have a capacity to place significant limits on our ability to set and reach goals.

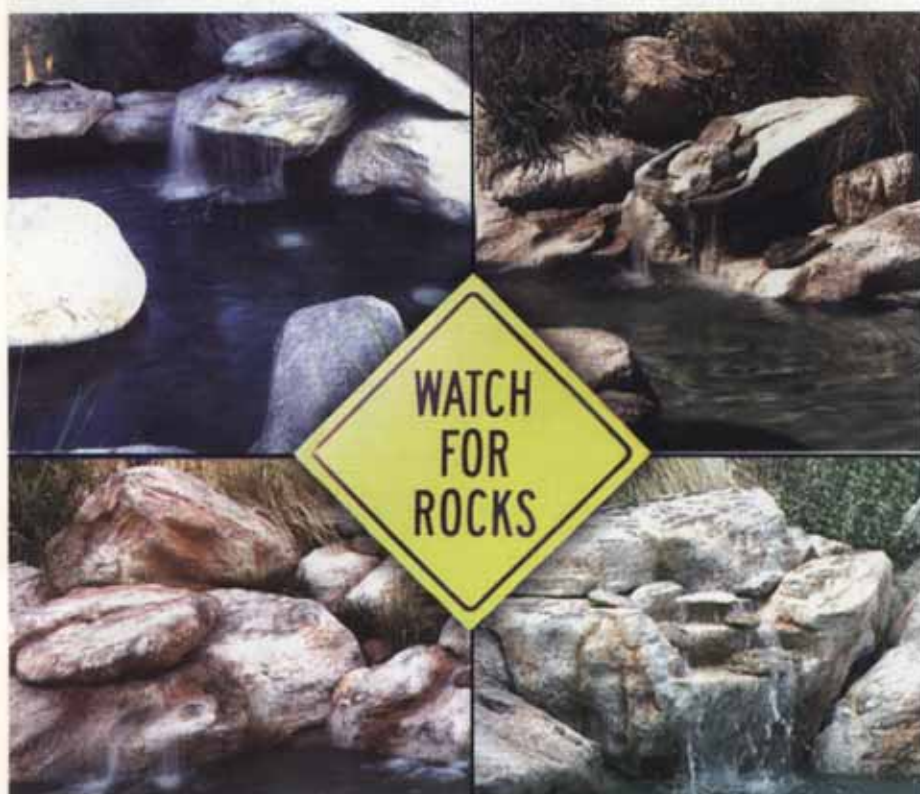
To get beyond those limits (some of which you might recognize in the list below), you need to identify them and work to overcome them.

▼ **Inhibitions:** At the beginning of this column, I inserted a quote from James Fadiman, author of *Un-limit Your Life: Setting and Getting Goals* – a wonderful book I read in 1993 and upon which I've based much of my own approach to goal setting. His exploration of human limitations is particularly insightful. He says, for example, that "Inhibitions are like 'Do Not Enter' signs in front of unlocked doors."

As some of you know, I'm an extremely uninhibited person, but like everyone else I've had to work at it. Ask yourself this: Do you ever say things such as "I can't do this" or "I'm not really interested in trying to do that"? Many of us, even the uninhibited among us, do this all the time – and limit ourselves in the process.

This is where being realistic about goals can be misused as an excuse for not moving forward. You hear it in things we commonly say, such as "I'm just being realistic" or "You can't get blood from a stone" or "I'm nobody's fool." Being re-

Ask yourself this: Do you ever say things such as "I can't do this" or "I'm not really interested in trying to do that"? Many of us, even the uninhibited among us, do this all the time – and limit ourselves in the process.



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alistic means finding a path to your goals. It does *not* mean coming up with excuses that prevent you from moving in the right direction.

▼ **Compulsions:** These constitute another nasty form of limitation that can be remarkably detrimental. I've known people, for example, who are scrupulously clean and organized, and certainly there's nothing at all wrong with being tidy and neat. But when you consistently focus on cleaning your desk instead of doing the real work at hand, then the compulsion for cleanliness becomes an enormous roadblock.

People who have underdeveloped imaginations will have difficulty setting goals that are outside the proverbial box, while people who are comfortable imagining the future will have a much easier time setting and realizing goals.

▼ **Habitual Behaviors:** Almost everyone I know has a bad habit or two – and many of them are things that have a way of limiting success in achieving goals by keeping you from moving toward your objective.

Habitual behaviors, whether implemented by individuals or organizations, are often used as a way to justify the status quo. In that context, even *positive* habits can get in the way if they become excuses for not trying new things or looking at something in a new way and end up trapping us in habitual rituals.

When you find yourself saying or thinking "That's just the way we do things" or "If it ain't broke, don't fix it," it's time to look closely at the limitations these thought patterns are imposing.

▼ **Guilt:** This is a big one – often one of the toughest limitations to identify and overcome: There are a great many people who for some reason believe they are un-

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worthy of success or happiness.

Figuring out why we suffer guilt can require some serious soul searching and self-awareness. The plain fact is that many of us are reluctant to set goals for things we really want because we feel guilty about moving purposely toward fulfilling our own desires.

▼ **Fear:** Nobody enjoys failing or being criticized, and I've known many people who will not venture into new territory in pursuit of a goal (or even set the goal in the first place) because the outcome of that journey is uncertain.

I've often heard it said that truly successful people have a failure-to-success ratio of about four to one, and history is peppered with stories of people from Thomas Edison to Henry Ford whose successes came on the heels of multiple failures. There is no shame in failing; in fact, I buy into the idea that the only true failure comes when you fail to try again.

Fear of criticism is another common phobia. Nobody likes it, whether it's fair or not, but there's no way to avoid it completely if you're striving to accomplish something exceptional in your work or personal life. The trouble with this phobia is that it tends to make you fear making the mistakes that inevitably come in striving for your goals.

A big part of goal setting is shedding this fear of failure, criticism or mistakes. All three are inevitable – and each gives you the opportunity to learn and gain skills that will help you attain your goals.

Imagination Quotient

Ultimately, our goals are only limited by our imaginations. People who have underdeveloped imaginations will have difficulty setting goals that are outside the proverbial box, while people who are comfortable imagining the future will have a much easier time setting and realizing goals.

Hard work, diligence and even luck play big roles, too, in how we reach our goals. Interestingly, I've found that the more I base what I do on both my long-range and short-term goals, the less what I do actually feels like "work." I've toiled hard

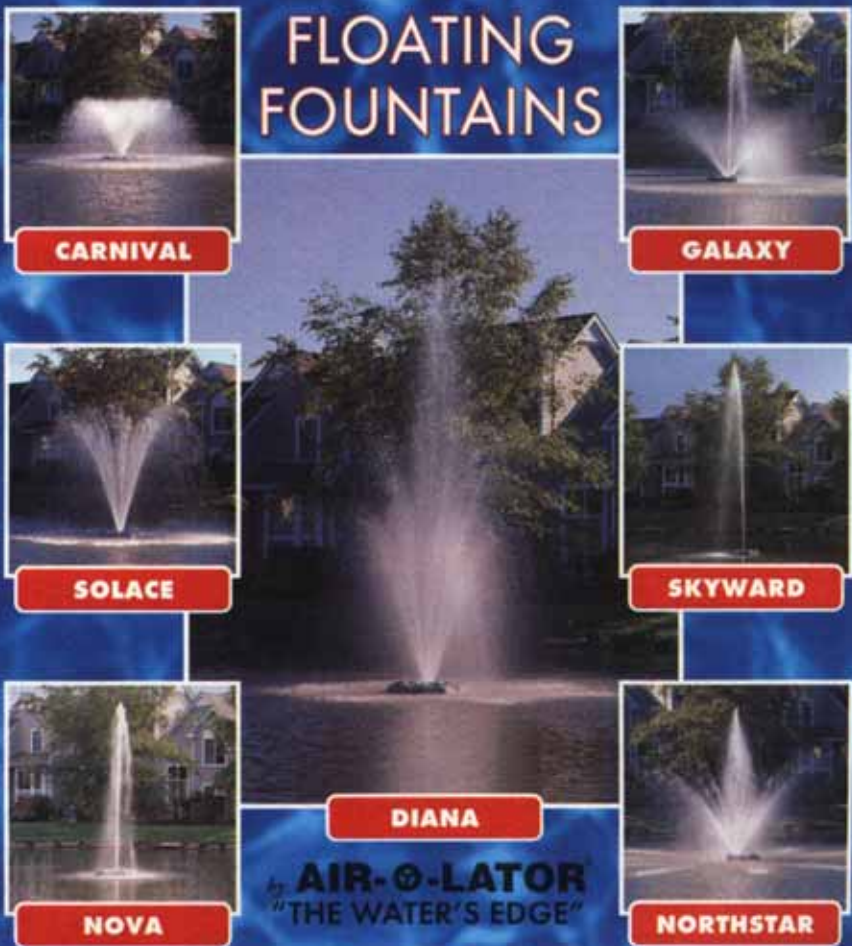
through the years and have run into my share of luck – but it wasn't until I discovered the power of setting goals that my hard work and good fortune started to pay dividends.

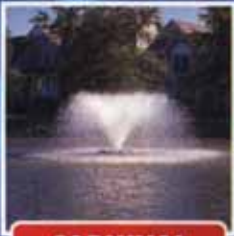
If my own life is any evidence, through goals we unlock a world of potential in which our fondest dreams become our immediate reality. **WS**

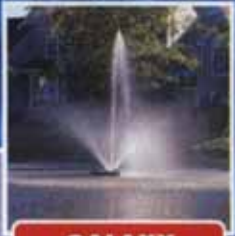
Brian Van Bower runs Aquatic Consultants and is a partner in Van Bower & Wiren, a pool-construction firm in Miami. He is also a co-founder of Genesis 3, A Design Group; dedicated to top-of-the-line performance in aquatic design and construction, this organization conducts schools for like-minded pool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

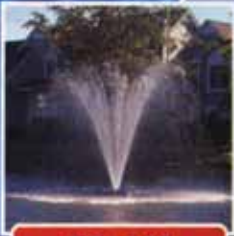
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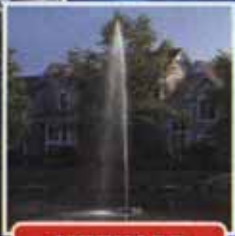
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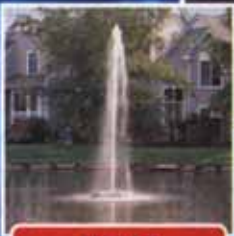



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Changing Zones

It's not often that we're asked to stretch ourselves. This past year, however, I was presented with that opportunity in landscaping a site that was quite different from the usual residential lots I encounter in Southern California.

Through all my years in business, I've become accustomed to working in a climate that supports year-round planting, year-round foliage and year-round lush views. In this case, I received a call to design a garden in the mountains above Southern California – and I jumped at the chance to branch out and do something truly different.

My clients owned a home on the upslope side of an empty lot for some time. They contacted the lot's owners and let them know they would be interested in purchasing the parcel if they ever decided to sell it. When the property came on the market some time later, my clients snatched it up quickly, hoping to enhance their enjoyment of their vacation home by expanding the size of their yard.

Their plans called for landscaping only – no residential structures were to be added. Needless to say, the neighbors were thrilled that some architectural monstrosity wasn't going to clog the property or their sight lines and that all they would see was a peaceful landscape when they looked out their windows.

I can prepare for most of my jobs on my home turf by going through a time-tested design/installation process with a rich set of plants and possibilities in mind, but this mountain-top challenge called for a whole new way of approaching things.

Setting the Scene

Lake Arrowhead is a resort community in the San Bernardino mountains, a couple hours' drive up from Los Angeles. The climate is vastly different from the west side of Los Angeles (with its ocean influence and where I design many projects) or the San Fernando Valley (where I live and know first-hand about its very hot summers and cool – but rarely freezing – winters).

Where I can prepare for most of my jobs on my home turf by going through a time-tested design/installation process with a rich set of plants and possibilities in mind, this mountain-top challenge called for a whole new way of approaching things.

When I initially met with the clients and surveyed the site, I found a property dotted by mature pines, redwoods, cedars and various other trees, as well as a carpet of pine needles. Their vision was to create a place downslope from the existing residence that would become an outdoor entertaining space as well as a place for them to rest and relax on their weekends and vacations.

One of the existing features that impressed me was a small recirculating stream they had built themselves out of rocks they'd found on their property. I immediately saw this as the design element I could use to tie the two properties together and suggested that we continue the stream by winding it further down the slope to a terminus under a wood deck we'd been discussing. We'd then surround the deck with enough planting to create an illusion that the stream continued past the deck.

At first, my clients sensed that all of this would run well beyond the budget they'd been considering. (All they'd been thinking of was a wood deck surrounded by lush planting and a fence.) After some contemplation and, no doubt, some "imagination time" spent dreaming about the stream, they decided this would be just the element they needed to create the environment they really wanted.

After a more detailed survey of the property, we launched

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into discussions of how they saw themselves using the space and what "feeling" they hoped to achieve with the landscaping. At that point, I made a few initial recommendations.

The Lay of the Land

I'd been doing some homework in the meantime and discovered that Lake

Arrowhead has strict laws about removing trees above a certain size. As luck would have it, we found it would be possible to nestle the wood deck among some of the largest trees on the property while sacrificing only a few small volunteers that fell under the size limit.

The big trees grew in a half-moon shape about two-thirds of the way

down the slope. The deck itself would rise well above the grade on the downslope side, while it would blend into the slope on the upslope side – leaving, of course, enough space for runoff to flow underneath.

Part of the property had already been surrounded by split-rail fencing, so I suggested we carry that look around the property for continuity. We also talked about installing a decomposed-granite pathway from the top of the new property down to the deck.

The new portion of the stream was to wind down the new property, terminating under the deck and visually linking the two parts of the property. As each step was discussed, my clients fell more and more in love with the way things were going.

The extension of the stream meant we would need to build some sort of bridge to span the pathway that led to the deck. Once we settled on using landscape ties for the purpose, it was time to consider the plants.

For me, the design work to this point had been pretty straightforward. I spent a good bit of time looking at the surroundings, evaluating the contours of the newly linked properties and, as always, considering my clients and the lifestyle they were striving to achieve. But how do you decide what to plant when you're not on familiar turf?

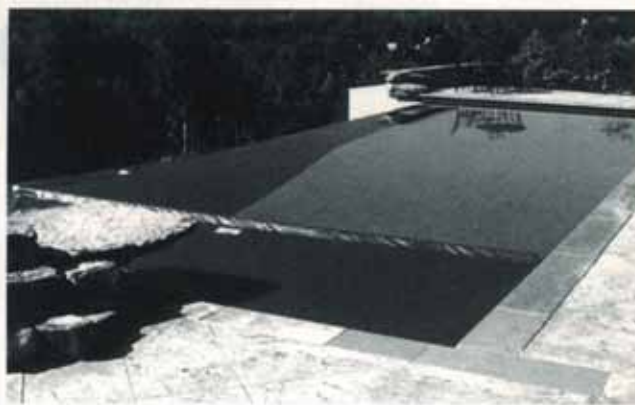
The first steps are easy. I began by going through the *Sunset Western Garden*

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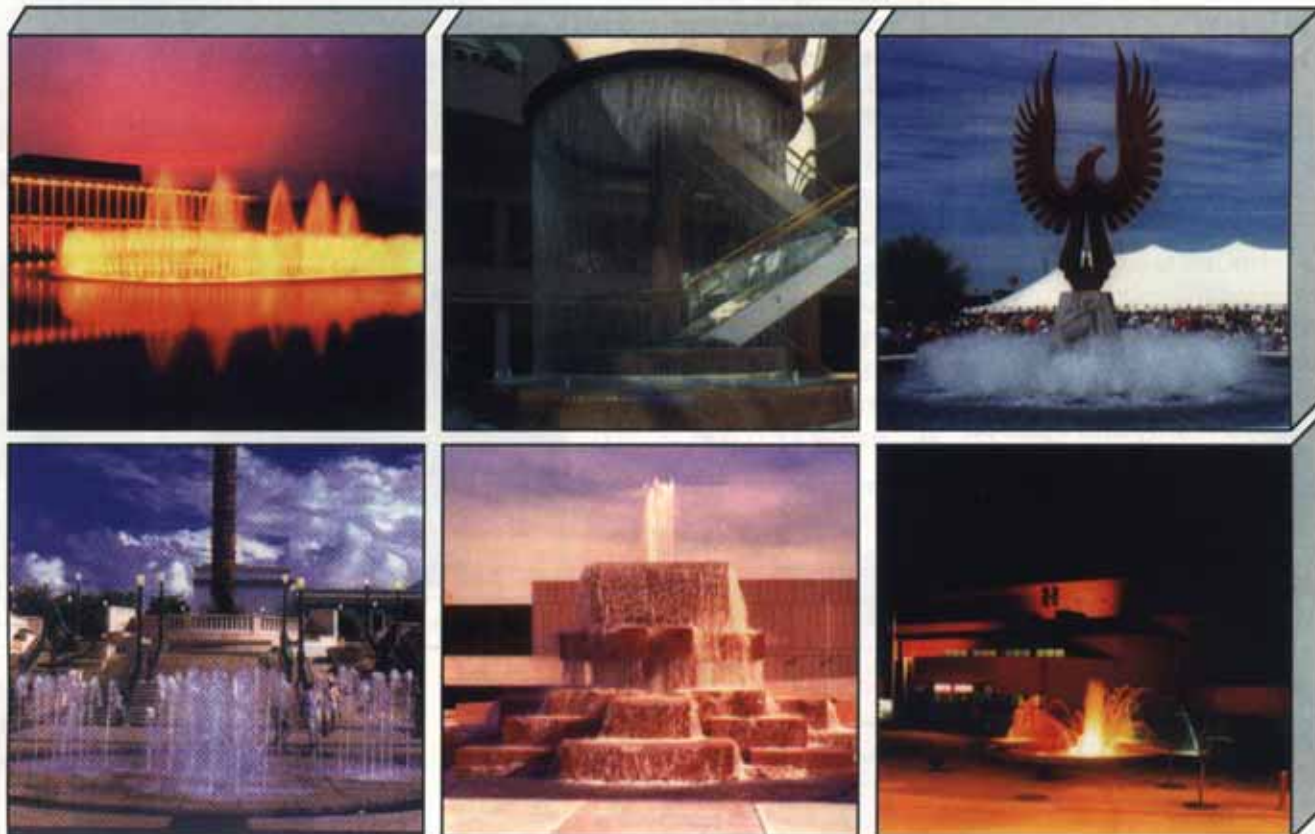


The winters on the mountain-top are harsh, but my research and the support of local nurseries made it possible to introduce an interesting variety of plants to this setting.

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Book (in other areas you could use *Taylor's* or the *American Gardening Guides*). After determining that Lake Arrowhead was roughly in Zone 3A, I compiled a list containing all the plants listed in the guidebook that fit within my design specifications and could survive in Zone 3A.

Calling All Experts!

Not being physically located in that zone or familiar with its weather patterns, my next step was seeking out the expertise of a local nursery or landscape contractor who might guide me in my planting selections.

I faxed plant lists to several contractors and nurseries, and only one contacted me in a timely manner. After I explained the project, the owner of the nursery agreed to review my list and send me suggestions about which plants would perform best – and, as important, which he could supply.

In this way, I was able to identify plants that were properly acclimated for the zone

We extended the existing streambed and used it to link the new and old parts of the landscape – and added a bridge over the stream to build visual interest.

The new deck is the terminal point of both the pathway and the stream and is isolated by the greenery that surrounds it on all sides – a perfect spot for entertaining or quiet reflection.



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and what was locally available (and what I'd have to supply myself through other means). After narrowing my selections and completing the planting plan, I sent the nursery my list. I was a bit disappointed at having to compromise on varieties: Instead of getting a specific variety of peonies or hostas I wanted, for example, I had to settle for colors that would work.

In one area, however, I was unwilling to compromise: I wanted *Acer palmatum* "Sango Kaku," a coral-bark Japanese maple that I felt would be stunning in the winter against a blanket of snow. The nursery owner told me he couldn't get the trees I wanted at first, so I told him I would pick them up "down the hill" (as residents of Lake Arrowhead refer to the rest of the world).

When he saw that he would be losing a significant sale (I had specified four of the maples in the design), he asked his supplier if the trees could be made available. Lo and behold, the maples arrived at the nursery soon after, and he immediately received multiple requests for the trees. (He later thanked me for educating him on a few different maple varieties that he was not used to carrying. Needless to say, he now carries them all.)

At the same time, he learned the benefits of stretching a little and taking a chance on unusual (but workable) plants. This process helped me gain his respect and confidence that I am a designer who knows plants and can work well in an unfamiliar area — something that will serve me well in any future mountain-top projects I tackle.

Finally, I figured that as long as my creative juices were flowing, I'd suggest something truly unique to my clients: I know that I would never be happy to be constantly running from deck to house carrying food, dishes and whatever else would be needed to make the deck the outdoor living space they wanted, so I suggested installing a dumb-waiter or some other sort of contraption to simplify the process of getting things from the top-level kitchen down to the deck far below.

I'd only been half serious, but they took the idea and ran with it. Being

sailors, they rigged up what they now call their "gondola" to make life in Lake Arrowhead even easier. It sure saves a lot of steps!

Next time: more about this project, thoughts on the installation and a discussion of contractor relations in unfamiliar territory. **VS**

Stephanie Rose runs Stephanie Rose Landscape Design in Encino, Calif. A specialist in residential garden design, her projects often include collaboration with custom pool builders. If you have a specific question about landscaping (or simply want to exchange ideas), e-mail her at sroseld@earthlink.net. She also can be seen this season in six new episodes of "The Surprise Gardener," airing Tuesday evenings on HGTV.

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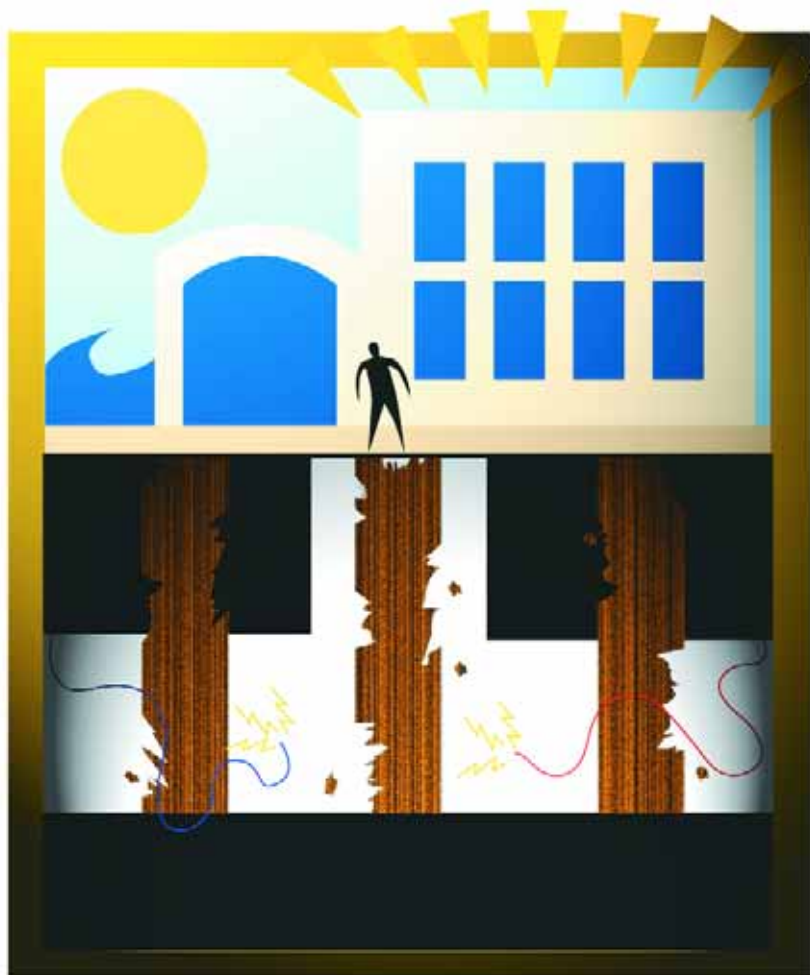
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Averting Disaster

Every once in a while, being right is *not* such a great thing!

Last month in this column, I described the initial phases of a spectacular project in Malibu, Calif., and one of the things I mentioned was the fact that from the moment I stepped onto the site, I suspected that there might be some serious problems afoot. This impression was based largely on what I saw to be substandard construction of the existing swimming pool and on concerns about the elevation of the deck relative to the structure of the house.

Unfortunately, those initial impressions turned out to be far more accurate than anyone could have imagined.

Below Par Below Grade

To reset the scene: The three-story home is a stunning modernist structure designed by prominent Los Angeles architect Ed Niles. It's located in the Malibu Colony, an exclusive enclave known for the wealth and celebrity of its residents, and commands a position on a point overlooking a reef – hardly the least impres-

This oceanfront project was distinctive in its own way. For one thing, we didn't expect that a Bobcat would drop three feet as the slate walkway that comprised the floor of the breezeway suddenly collapsed.

sive property in the neighborhood.

The swimming pool, which was to be remodeled, was located in a narrow courtyard surrounded by the house on three sides and by a tall wall on the fourth. Access to the space was limited to a six-foot-wide breezeway at the front of the house.

As is true with most beach communities in Southern California, the houses in the Colony are set on narrow lots and are often only a few feet apart. In those close quarters, street space is at a premium and there's not much by way of parking or areas to store or maneuver materials and equipment. All of this increased the level of difficulty of the project, but it wasn't anything my crews haven't dealt with before.

But this oceanfront project was distinctive in its own way. For one thing, we didn't expect that a Bobcat would drop three feet as the slate walkway that comprised the floor of the breezeway suddenly collapsed.

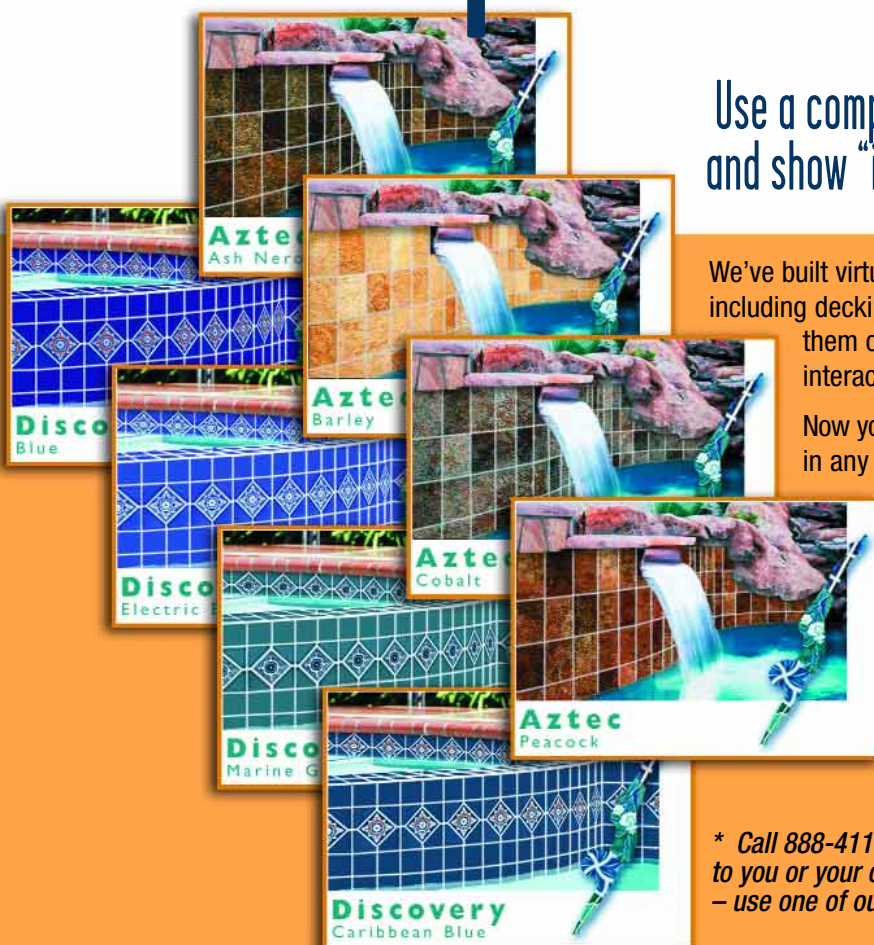
When we pulled the Bobcat out and examined the hole, we saw that the breezeway floor, which appeared to be slate-veneered concrete, was actually a flimsy structure of floor joists surmounted by plywood onto which slate had been applied with a thin coat of mortar. The wood was entirely rotten, and we found exposed electrical wiring running through the bays between the joists – a scary situation, to say the least.

At this point, I was starting to get a *very* bad feeling about what was going on underneath the rest of the house. When we finished pulling out the pool and the rest

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of the deck, we all began to see just how awful such things could get.

The house itself had been built on a system of piles and grade beams, a typical type of foundation for structures set in sandy, oceanfront soil. The problem in this case was that the builder had used large wooden joists atop the grade beams — all of them set below grade.

Any contractor worth his salt knows in applications such as this one that the foundation of the house should be concrete, not wood — or that the grade beams should be raised to elevate the wooden foundation above grade. Neither was the case here, and the results carried a potential for disaster.

Evaluating the Situation

In California, there's a code requirement for a minimum of 24 inches of air-space around any wood located below grade. The reason is obvious: It's to prevent dry rot.

In this case, the builder had actually

back-filled up against the wood with the sandy soil. The foundation's only protection against moisture was a thin skin of aluminum flashing — totally inadequate to the purpose. In fact, it was really only a matter of time until the foundation

failed completely.

When we exposed the joists — large, structural framing members — they were indeed rotting away. Although the house had stood for years and had endured a number of earthquakes, it was not be-



Once our excavation of the courtyard was complete, we were able to see that the way the original deck had been set up had done an amazing amount of damage to the wood in the home's foundations.

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yond reason to think that at some point a sizeable temblor could've brought down a significant portion of the structure.

Furthermore, once we removed the pool, which had been butted up against the large wall that enclosed one side of the courtyard, we could see that the previous pool builder had not been up to the task. For starters, there was no slip joint between the pool and the wall, so when we pulled the concrete of the pool structure away, big chunks of the wall came with it. The wall itself looked like masonry, but actually it was stick construction and was suffering from many of the same problems as the foundation of the house.

Furthermore, the piles supporting the wall had been set up to 11 inches into the pool area, where they actually should have been set toward the outboard side of the wall and back toward the property line. This led me to design a beam detail that let us work around the inset piles and that accommodated the need of wall and pool to move and settle in-

dependent of one another.

But as excavation continued and we kept running into problem after problem, these issues of the structural detailing of the swimming pool's bond beam seemed trivial. By the time the Bobcat finished its work, we were far more concerned about the structural integrity of the house than we were about installing a pool.

Fortunately, further examination of the foundation showed that large portions of the home had been properly built with adequate concrete foundations. Most important of all, the concrete seawall was intact, and all the other walls running parallel to the ocean were concrete as well. Unfortunately, however, the walls run-

Our digging revealed that the old pool had been set up against the wall with no slip joint—hence the easily visible damage—and that the piles supporting the wall had been set to the inside of the wall, intruding about a foot into the pool area.



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ning *perpendicular* to the ocean (and parallel to the pool) were on wood – and supported large portions of the house.

Ultimately, we exposed dry rot on about two-thirds of the structure immediately surrounding the courtyard.

The Big Dig

These problems obviously had to be remedied, and I knew I wasn't the one to take on the task. My expertise may be building pools cantilevered off of the side of mountains, but I've never claimed to be a structural engineer.

After we'd dealt with the initial shock of the condition of the home and had survived a very difficult conversation with the client, I contacted two people I knew could be of real assistance in this tough situation. One was general contractor Rick Shevit, a man I trust, respect and admire. (His firm does all of my forming to a standard that is virtually unmatched.) I also contacted Mark Smith, one of the smartest structural engineers I've ever met.

At that point, I stepped back and let the experts take over until the problem was resolved. It took some time, but before long Shevit and Smith had devised a detail that would save the house from ruin. We met with the owners to describe the fix – and I said goodbye to the site for about five months.

Again, I'm not an expert in these matters, but what they came up with was a "sistered" joist system that buttressed the rotting timbers. Suffice it here to say that the method they created for reinforcing the foundation almost certainly saved one of the most spectacular houses I've ever seen.

One of the consequence of Shevit's and Smith's labors was that the seven feet of excavating we'd already done to create an adequate foundation for the pool had been extended down another three feet to give Shevit's crews the access they needed. This left a massive pit where the courtyard had once been.

Once the structural work was done, it was time for my crews to get back to work. We now moved forward rapidly, forming the pool, installing the steel and setting up lines to take care of every conceivable need (and then some).

All of this work left one issue com-

pletely unresolved – so let me conclude this chapter of the story by jumping ahead several months to describe the design and construction of the new deck.

A Pyramid Scheme

Of course, we had no intention of repeating the mistakes of our predecessors or of leaving the new joist system below

grade without a generous gap between structure and soil.

The simplest thing probably would have been to lower the level of the deck, but we didn't have the option because the clients absolutely did not want to have to step down into the courtyard. (That was actually a good thing, because the four six-inch risers that would have

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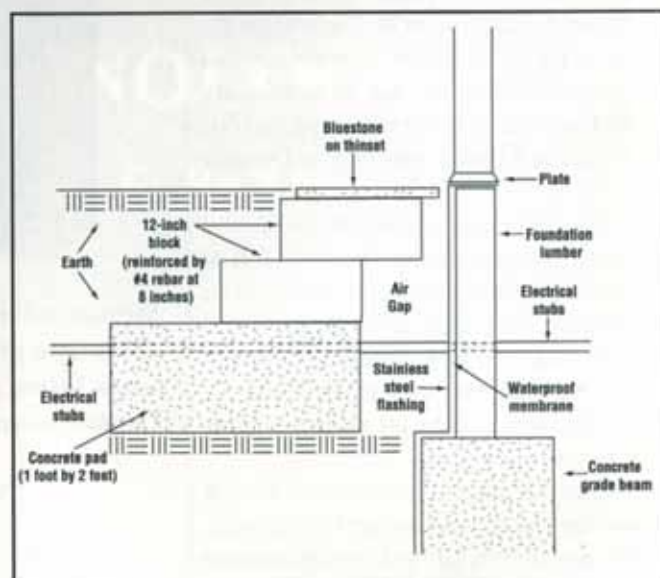
been required to create such steps would have extended about four feet into the courtyard and run far too close to the pool structure.)

Mark Smith weighed in once more, proposing a plan that would cantilever a structural deck from the house to the pool. This would leave a huge void below the deck, which led us all to think of a new storage area, or perhaps a wine cellar – and for a brief time it looked as though that was the direction we'd take.

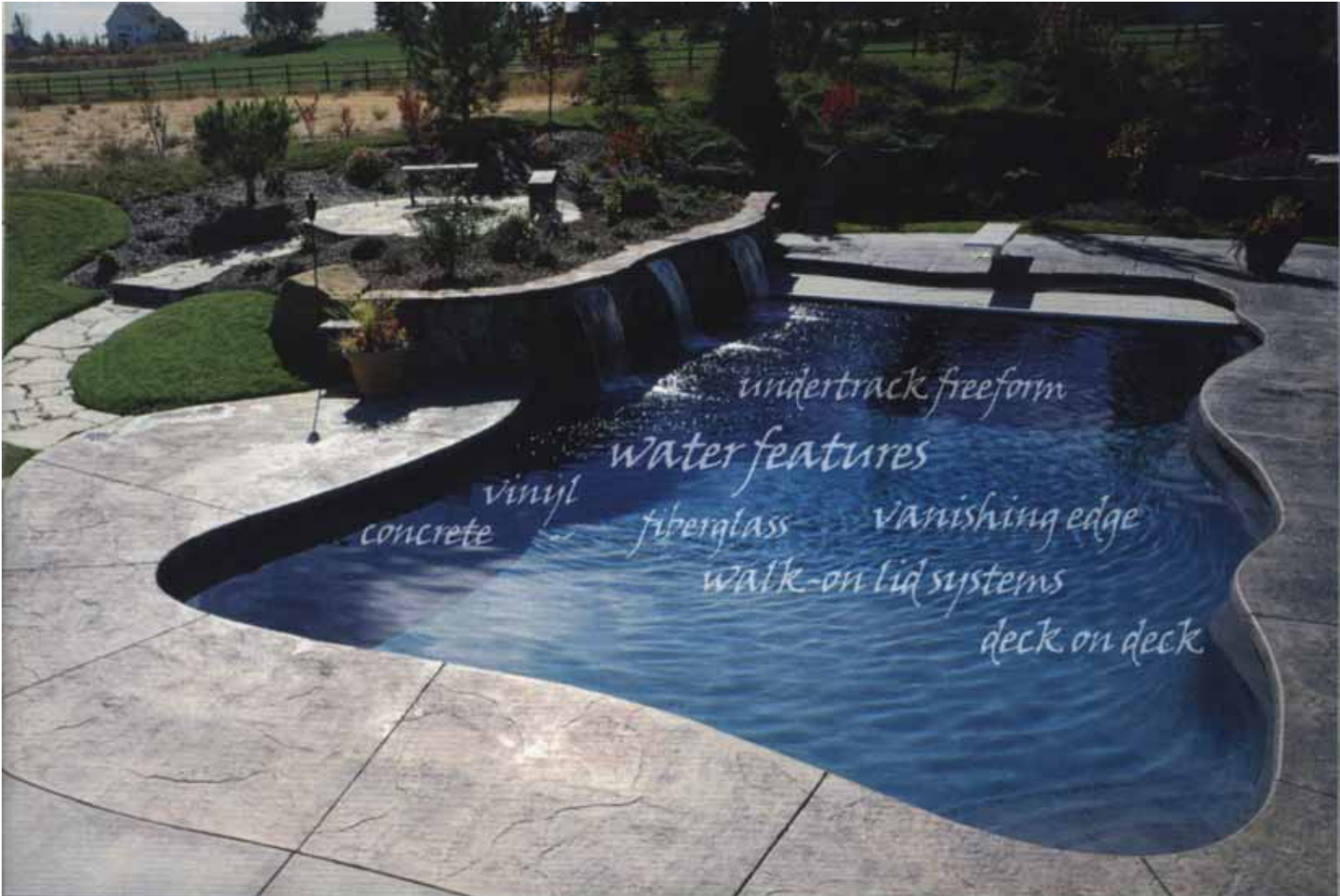
But the bad luck wasn't at an end just yet: While removing the soil from the courtyard, we found a large septic tank that had outlived its purpose. It had been leaking in a minor way for some time and needed replacement, which was



The repairs to the foundation left us the challenge of isolating the foundation against future damage. By itself, the flashing would offer no protection if we simply backfilled and repeated the errors of our predecessors.



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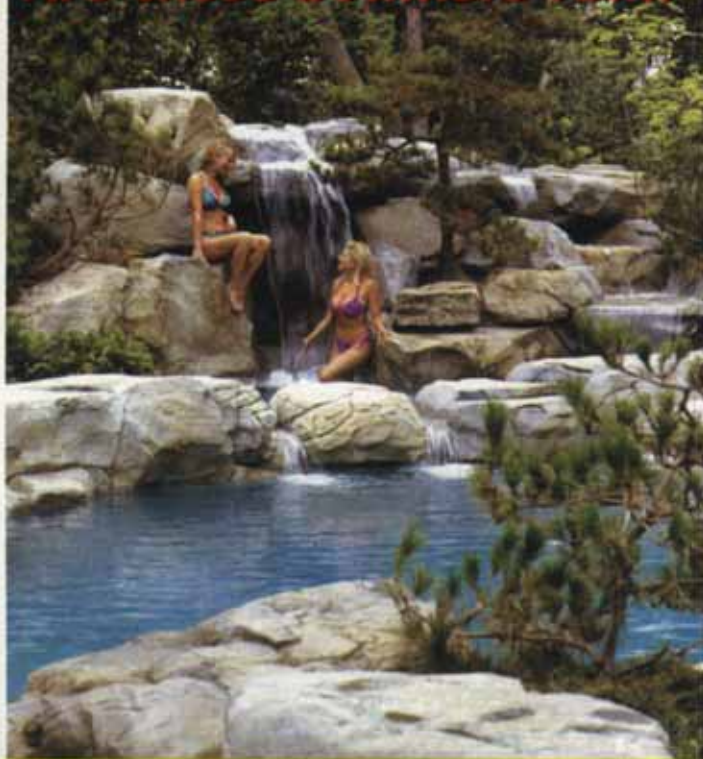
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With the ziggurat complete, we set up the home course of the bluestone decking – careful to maintain a small gap that will keep air flowing between the wall and the foundation.

something the homeowners were reluctant to do, to put it mildly. But stuff happens – literally in this case – and a new septic system was installed.

After footing the bill for fixing the foundation, replacing the septic tank and deciding to move ahead with the pool project, let's just say that my clients had lost interest in taking on the added expense of the underground storage area. What this meant was that we'd eventually be refilling the courtyard and would now have to come up with some way to create a below-grade air gap around the foundation.

It took some time, but eventually I came up with a detail based on the ziggurat, a structure first used by Babylonian architects to build their great towers and something I'd seen up close in the Valley of the Kings in Egypt. As Figure 1 shows, it's a step structure that rises to a pinnacle. My idea was to cantilever a similar structure out over the area adjacent to the foundation of the house. This would create the essential air gap while providing adequate support for the deck structure above.

In addition to providing the all-important air gap, the ziggurat creates a channel to divert runoff from rainwater, provides a gap between the stone deck and the house to allow for differential settlement and, finally, sets up an area where we could bore weep holes to channel excess water into the sandy soil.

It worked like a charm, and I'm happy to report that the former problems with the foundation of the house are now little more than ancient history.

Next time: resuming the construction process with steel, forming and plumbing.

David Tisherman operates David Tisherman's Visuals, a design and construction firm based in Manhattan Beach, Calif., with offices in Marlton, N.J. He is co-founder and principle instructor for Genesis 3, A Design Group, which offers education aimed at top-of-the-line performance in aquatic design and construction.

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For more than four centuries, Italy's Villa d'Este has inspired designers and most **everyone** else who has visited the site. Landscape architect and contractor Mark Holden, for one, has had a **career-long** interest in the **legendary** estate and takes this opportunity to share his love of its amazing architecture and gardens – all with the **intention** of highlighting design **concepts** today's watershapers can use in creating their own masterworks.

By Mark Holden

Water

everywhere

We've all heard and read how important it is to study the achievements of our predecessors in watershape design and engineering. Indeed, exploring these historic works is vital for the role it plays in emboldening our sense of artistic tradition and inspiring our creativity by offering rich galleries of design ideas.

When considering Villa d'Este in such light – its extraordinary architecture, otherworldly gardens and daring watershape designs – it's easy to see why this grand estate is so important to us now. It's widely considered to be the most significant residence surviving from the Renaissance and has every right to claim to be the most beautiful and influential as well.

Surely there's no substitute for traveling there and lingering with eyes wide open, but even from afar, we can and should turn to this amazing estate as a source of artistic inspiration and, in many respects, as a technical blueprint.



a comprehensive program

These days, most of us are more familiar with Bellagio than we are with Villa d'Este, upon which the spectacular Las Vegas hotel was patterned. Even with its posh appointments and remarkable dancing waters and spectacular technical achievements, however, I'd argue that the modern replica doesn't come close to the original in beauty, grandeur or technological innovation.

Nestled in rolling terrain near the shores of Lake Como and in the town of Tivoli – about 20 miles east of Rome – Villa

d'Este is one of several Italian villas that have survived from the 16th Century. Like a great opera, the villa is vast and multifaceted, with seemingly endless variations on its key themes and voices.

At every turn, it challenges us to plumb its depths and learn what we can of its structure and complexity, from its sweeping axial geometry to its pinpoint details and stimulating narrative program. In these surroundings, we find a living, historic palette of ideas and stories related to us in three dimensions.



Photos courtesy Phil Pregill, California Polytechnic University, and Sharon Lewis, Manhattan Beach, Calif.

The Alley of

This famous colonnade of fountains connects two major elements of the garden: the Rometta and the Oval Fountain. The Rometta symbolizes Rome, while the Oval Fountain represents Tivoli, making the alley a metaphor for the journey between the two places. The many statuary faces emit even streams of water, serving as evidence of Chiruchi's precise control of flow over considerable distances.

One Hundred Fountains



The Dragon

The Dragon Fountain is situated just below the main house and serves as the Villa d'Este's central hub. It tells the story of Hercules, patron deity of Tivoli, who slew a multi-headed dragon as one of his heroic exploits. The dragon serves as the fountain's centerpiece amid a large oval basin cut into the slope. This allows visitors to come in close proximity to the fountain on several levels as they descend a staircase that wraps around the pool's perimeter.

Fountain





The

Surrounded by stone structures that call to mind many of the Eternal City's most famous and familiar structures, the Rometta capsulizes the glory, honor and history of Rome in a whimsical way. Figurines and statues take up positions within a criss-crossing watershape and focus on the Rometta's stone obelisk and a boat meant to symbolize a boat-shaped island in the Tiber River just outside Rome.

Rometta



The design and construction of Villa d'Este stretched from roughly 1550 to 1572, the product of a glorious collaboration between its owner, Cardinal Ippolito d'Este, and the renowned historian and architect, Pirro Ligorio. During its long history, the villa has seemingly grown only more beautiful and visually compelling.

One reason for its enduring appeal and influence is that the property is among the most complex design achievements in all of Renaissance architecture. Ligorio's antiquarian tastes and affection for Roman myth and culture infuse the entire estate, from the frescoes adorning the interior walls with tales of Hercules and Neptune and other mythological figures to the elaborate statuary and watershapes that infuse the exterior spaces with echoes of those same heroic themes.

The exterior spaces are lush and green and wild, but the estate is also set up on an elaborate axial grid that connects the garden spaces to the world beyond the estate's perimeter. Direct lines run from the garden to landmarks in Tivoli, for example, and precise "force" lines can be drawn from the villa's core that pass through its major watershapes to terminal points at ancient archaeological sites in neighboring hills and towns where Ligorio unearthed much of the statuary with which he graced the grounds.

This linking of environments by way of visual motifs and spatial relationships is a prime lesson of Villa d'Este—a set of principles we can apply with most of the situations and design modes we use. The work with landforms and topography is also exceptional, from the elegant stairways (both dry and wet) connecting upper and lower terraces to the ingenious use of viewpoints, per-

allegories

In developing themes for decoration of Villa d'Este, Pirro Ligorio looked back to ancient Rome and a rich, deity-filled mythology that formed the spiritual core of one of the most dominant civilizations the planet has ever seen.

The rich and powerful of Renaissance Italy saw themselves as the "heirs" of those ancient Romans and surrounded themselves with styles, statuary and symbols that harkened back to the greatness of Rome. This is why, inside and out, Ligorio infused Villa d'Este with all the references to antiquity he could muster, from elaborate frescoes on mythological themes inside the residence to the artworks he chose as the centerpieces for the fountains he placed outside.

The interior and exterior spaces literally worked hand in hand: When Ligorio would unearth a significant piece of ancient art in one of the local archeological sites he frequented, he would use it as a centerpiece for the new watershape for Cardinal d'Este, then commission frescoes for interior walls to express the story more fully.

This manner of design and the deliberate linking of watershapes not only with their garden surroundings, but also with an overall program for an entire estate, is a signal achievement at Villa d'Este, but it's never a weighty concern. Instead, the villa's use of pagan deities and tales is lighthearted and familiar, creating spaces that – then as now – inspire easy smiles rather than religious awe.

– M.H.





The Oval

Where the Rometta shows the power and passion of Rome, the Oval Fountain (or the Fountain of Arethusa, as it's also known) captures all of Tivoli's subtle and sensual elegance. The organic backdrop and the simple flows of water offer a dramatic contrast to the Rometta's erratic spouts.

Fountain



spective and layering of views to make the gardens a visual feast for visitors.

a passion for water

The feasting is enhanced, of course, by the beautiful fountains and watershapes that dot the grounds. Not only are they remarkable for their detail and sheer beauty, they also represent an amazing engineering achievement when you consider that the villa's waterworks – and 500 fountains in all – were originally run by head pressure generated by a system of cisterns and aqueducts.

To my mind, this single factor, this astonishing level of hydraulic sophistication and application, puts Villa d'Este in a league with such marvels as the baroque gardens of Versailles in France and the Moorish complex of waterworks at Generalife in Spain.

Villa d'Este sits atop a small hill in the town of Tivoli, which for centuries has been one of Italy's most obvious enclaves for the affluent. Here Ligorio, far better known as an antiquarian and historian than as an architect, created one of the Italian Renaissance's greatest artistic achievements in collaboration with Cardinal d'Este, scion of a powerful and influential family.

The cardinal brought Ligorio to Tivoli to transform an existing monastery into a summer villa. Steeped in Roman mythology and culture, Ligorio vested the work with an explosion of literary allusions and classic design elements. He himself led archeological expeditions to the surrounding hills to unearth the Roman statuary and antiquities to be incorporated into the design throughout the estate, inside and out.

When it came to the watershapes, however, Ligorio brought in an expert, Thomaso Chiruchi, widely reputed to be the best hy-

The Water

This feature stands as one the Renaissance's (and all of history's) most original watershapes. Claude Venard of Burgundy, an extraordinary manufacturer of pipe organs, helped Chiruchi execute Ligorio's vision: Special pipes were built to create various organ-like sounds that resonated throughout the entire garden. The centerpiece statue has been moved and the pipes are no longer tuneful, but the organ was once the "auditory" center of the villa's gardens.

Organ



The Fountain

Given its name for the owl-like sounds that emanated from a pipe system similar to that of the Water Organ, this watershape is set slightly out of the way of main traffic patterns and is further isolated by walls that give it a courtyard-like setting. The columns on either side of the centerpiece feature hand-carved vines and various other plant materials and birds created by the Renaissance artisans.

of the Owl



draulic engineer of his day. Working within a scheme that called for the most dramatic water effects possible, Chiruchi delivered in truly grand style.

The site was challenging, with severe grade changes and the rigid geometry of the site plan. The water source was the River Aniene, which Chiruchi diverted and channeled into a vast hydraulic network that fueled effects that would be difficult to achieve even using modern pumps and valves. Nothing was wasted: Water would be used for a watershape on one level, and then channeled to one or more watershapes at lower levels to create even more effects before the water passed into Lake Como.

Every one of the major watershapes fits into a complicated gridwork cast over the entire estate – a measure of control in what seems an amazingly spontaneous, fluid and organic composition that has more than stood the test of time.

classic reflections

One of the classic elements of Renaissance architectural design is the careful use of reflection.

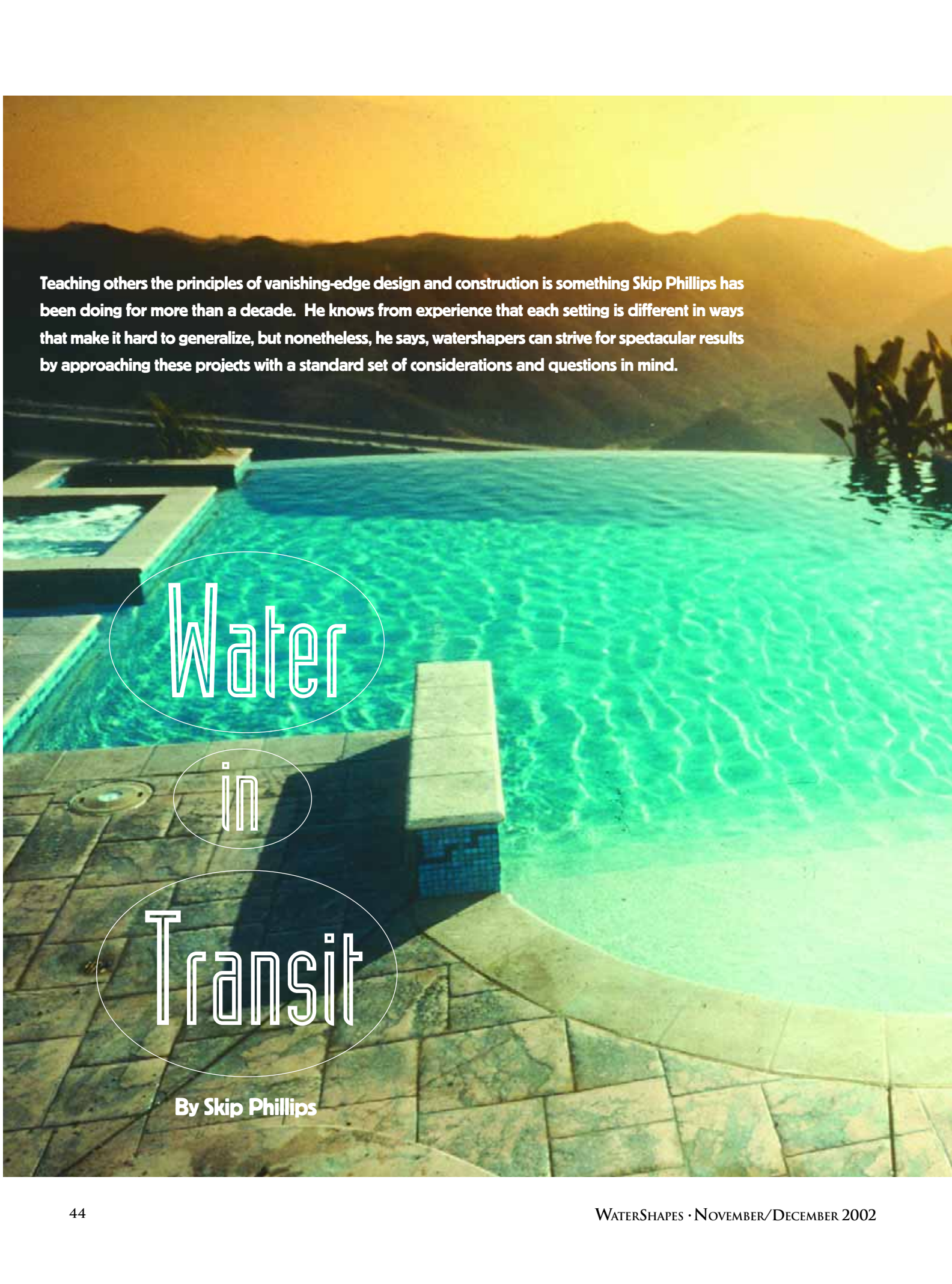
This is best seen at Villa d'Este in the series of fishponds situated below the Water Organ: Three static pools cascade down from the enigmatic organ and provide crystal-clear, mirrored views of the organ and its immense spouts. As visitors stroll between the ponds on the thin walkways separating them, they access different angles of reflection and enjoy new experiences.

This is a spectacular example of dynamic hydraulics performing one function while sheet-like, static water performs another and is just one of the many observations one can make about Villa d'Este that can be directly translated to applications in the here and now.

There are two keys to setting up these reflective surfaces: First, you need to make the inner surface of the reflecting pool dark – the darker the better – which enables the water to reflect more of its surroundings with greater depth and clarity. Second, you need to set up the circulation system so that returned water does not create turbulence of any kind at the surface.



– M.H.



Teaching others the principles of vanishing-edge design and construction is something Skip Phillips has been doing for more than a decade. He knows from experience that each setting is different in ways that make it hard to generalize, but nonetheless, he says, watershapers can strive for spectacular results by approaching these projects with a standard set of considerations and questions in mind.

Water

in

Transit

By Skip Phillips



Vanishing-edge pools are all about changing the relationship of the water to its surroundings. They enable the water to reflect views and create visual links to the surrounding scenery in dramatic and surprising ways that simply can't be achieved with conventional designs.

The same distinction is true of perimeter-overflow systems and pools with deck-level (or slot-overflow) designs, which is why I classify all three together as "water-in-transit" systems. There's a lot of diversity under that big conceptual umbrella, but these pools share important characteristics and require similar approaches in design, engineering and construction.

The similarity begins with a common definition: These are systems in which water flows over an edge from a primary vessel into another, usually smaller vessel that is designed to accept a constant flow of water needed to maintain the primary visual effect as well as the anticipated surge in flow that occurs when bathers jump into the main pool.

Through the years, I've participated in many discussions about these designs in trade show seminars, during Genesis 3 schools and in the pages of trade and consumer magazines. I've found along the way that, even though it's difficult to define a standard in specific mathematic terms (except for a few key parameters), there is a set of key considerations that lead to success.

At the Edge

Any design project begins with evaluation of the setting, the surroundings, lines of sight, elevations and all of the idiosyncratic, site-specific factors that drive aesthetic decisions. As those factors are weighed, only then do practical issues of how things are done and how aesthetic effects can be accomplished come into play.

We'll come back to the aesthetic issues later, but I want to start with a tangible, practical consideration – specifically the fact that any water-in-transit system involves you in sending water over an edge, which means you also have to capture that water and re-circulate it.



Breathtaking: Aesthetics are important for vanishing-edge projects, but so is precise, up-front control of a range of hydraulic and construction issues that settle into the background once the water begins to flow.

The systems used to do this trick can be broken into two distinct categories: attached or detached surge systems.

- The *attached* system is most often represented by the familiar cross-section of a vanishing edge where the trough is two feet wide, two feet deep and two feet below the edge, with those dimensions varying, of course, based on a variety of factors such as the elevation of the surge tank, the length of the edge and the desired surge capacity.

- By contrast, you can capture the water in a smaller gutter or a perimeter overflow slot and rapidly transfer it to a *detached* surge tank. These remotely positioned systems give you a great deal of flexibility when it comes to locating and concealing the surge capacity.

There are significant differences between these surge designs, but your basic responsibility remains the same: You need a container that can accept and contain the constant flow of water over the edge

as well as any bather surge you anticipate. This means that, irrespective of the vessel you're using to accept the surge – whether it's a catch basin or a remote surge tank – you must establish both the minimum operating level of that vessel and its overflow level.

Both of these are volumetric issues determined by how much water will flow over the edge. The *minimum operating level* (MOL) is the easy part. It's something you can control with an automatic fill device and calculate with good accuracy once you know the length of the edge and the lift and flow over it. (For the record, I always opt for solenoid-controlled automatic-fill systems rather than float systems.)

By contrast, the *overflow level* is much less controllable because you can never really know how many people might jump into the pool at the same time. At Questar Pools, we base the volume of the surge tank or trough on two inches of dis-

placement over the entire surface of the pool. It's a simple calculation: just multiply the surface area of the pool by 7.5 (the number of gallons in a cubic foot of water), then divide that number by 6 (two inches is a sixth of a foot). This gives you the volume in gallons for two inches across the entire surface of the pool.

You could also calculate the estimated displacement of a given number of people in the water. That would be better than no standard at all, but it's not very accurate given the fact that when people jump or dive in, their level of displacement far exceeds displacement predicted by body mass alone and is impossible to anticipate.

Wiggle Room

In the aerospace industry, designers and engineers are always considering the possibility of catastrophic events. This leads them to build redundancy into their systems and to anticipate the lim-

its of system tolerances.

Designing for surge capacity is similar, and I always suggest erring on the side of over-sizing the vessel you're using to capture the water. If you have a small pool that you think may occasionally receive extremely heavy use for some reason, then design the system using three inches of displacement as the criterion instead of two, for example. It certainly can't hurt anything – and in fact might create a buffer that could help you avoid disaster down the line.

Another consideration here is the gravity-fed overflow plumbing. In too many cases, I've seen projects in which the surge tank is of adequate size, but the builder considered neither the minimum operating level nor the location of the overflow pipe. If either the operating level is too high or the overflow is located too low (or both), you can reduce your surge capacity through their interaction without knowing it.

When you make this mistake, you find yourself in a vicious drain/overflow cycle: When several people jump in the water all at once, the surge tank will overflow in rapid order and lots of water will be sent to waste via the overflow pipe; when everybody climbs out, the surge tank runs out of water well before the water in the pool can breach the edge again.

The same holds true for gutter or slot-overflow systems, both of which can be set up to accept the entire surge on their own or transmit it to a surge tank. If you have a gutter system, you can safely assume that almost all of the water will predictably be caught in the gutter system. With a slot overflow, however, you must assume that lots of water will flow *past* the slot and will need time to drain back into it – and will do so only if the deck is pitched to direct the flow.

In addition, if the water moves from a gutter system to a separate surge tank, you'll need either to create the gutter with a pitch that sends water rapidly to some collection point, or you'll need to establish plumbing connections beneath or alongside the gutter. Both approaches work well if you set things up properly.

With slot overflows, there are a handful of other key issues. In systems that are designed so that water moves into the gut-

ter or slot and flows out one end into a surge tank, for example, you can have issues with debris. To keep the channels clean, you either need to be prepared to flush the system manually or (as I prefer) ensure the fact that the water will move rapidly enough in the system to flush away any debris. This is typically accomplished via a system that includes a plumbing loop and multiple drainage connections to the surge tank.

In these systems, you'll also need to protect against backflow as well as take steps to avoid the excessive noise that can occur as a result of water flowing into the slot or pouring into the surge tank. The solutions to these potential problems are complex and go well beyond the scope of this article.

(It's also relevant here to point out that expertise in water-in-transit systems requires far more detailed information than can be found in any single article. The Genesis 3 Schools offer a much more comprehensive look at water in transit that includes, for example, detailed examination of noise-reduction issues as well as many more fine points of the construction process.)

General Hydraulics

Beyond the basic system-design issues covered so far, much of what it takes to achieve a successful water-in-transit system has to do with hydraulic calculations, including consideration of turnover rate, line size and component selection – basic stuff, certainly, but of critical importance with these systems.

In teaching about water-in-transit pools, I've found that many people want to follow "rules of thumb." If you're among those who like these handy guidelines, let me warn you away from one that causes problems: the pool industry's minimum standards for hydraulic design. The recommended line velocities of eight feet per second for suction lines and ten feet per second for discharge lines will leave you no room to maneuver!

I prefer to use lower line velocities as targets – a maximum of seven feet per second for both suction and discharge lines. In most cases, what people will find is that as they increase their line size, their flow rates will continue to increase if they

Responsibility

The unfortunate reality of many vessels with water-in-transit designs is that the people designing and building them have only a vague grasp of basic hydraulics and precision construction, both of which are essential with these projects.

If you're overmatched when it comes to sizing a line, a pump, a skimmer and a filter, there's no way you're ready to jump into water-in-transit designs. Similarly, if "close" is good enough for you when it comes to construction tolerances, these are projects that will come back to haunt you, financially and probably legally.

That said, it's important to bear in mind that hydraulic-design parameters, tight tolerances and all of the other things you need to do and keep straight are attainable if you take care, have pride in your work and, above all, understand the primary responsibilities that are part of the deal when you tackle one of these projects.

That's true for any watershape, of course, but you can assume that those responsibilities are dialed in at a much higher level with water-in-transit designs.

The stakes are higher if only because you often face situations in which a mechanical or hydraulic failure can go from being a mere nuisance to becoming something catastrophic. So instead of mundane complaints about a pump that fails prematurely or a system that is too noisy or one for which operating costs are too high, you can face flooded yards or structures and the real possibility that you might lose the entire vessel to an undermined slope.

—S.P.

use the same size pump, while line velocity decreases. I steer clear of minimum line-velocity standards altogether by always upsizing the plumbing if I get anywhere *close* to seven feet per second.

For primary circulation in most systems, we use half-horsepower pumps on



MORE THAN MEETS THE EYE: Perimeter overflows can be spectacular, but they're nothing without correct calculation of the surge capacity, proper sizing of the piping and pumps, careful attention to the slope of the drainage slots and uncompromising precision in edge construction.

a minimum of two-inch plumbing, 2-1/2-inch plumbing on systems that use 3/4-horsepower pumps and three-inch plumbing on lines with one- to three-horsepower pumps. Almost invariably, these alignments of pump and pipe will keep us well below seven feet per second.

We also use line-size valves and check valves. After all, there's not much point in using three-inch plumbing if you're restricting the flow with two-inch valves. For similar reasons, we also make sure that all of our equipment is installed with line-size connections.

The way we look at it, we live in an imperfect world. As much as we might try to account for every single elbow and every single component in completing our hydraulic calculations, we believe in giving ourselves a buffer when it comes to pump and line size.

Going back to my point about the aerospace industry: We want precision, but we also want to maximize the operating ranges in which the system will deliver best results.

The Edge Factor

Once you've established surge capacity and basic hydraulic design, the edge detail itself is the next critical element you need to address. The key considerations here are the edge length, tolerances and the edge detail.

❑ **Edge length:** This is an aesthetic as well as a practical issue. With a vanishing-edge pool, you can get to a point where you're designing an edge that's so short, you may need to question whether or not it's worth it. My personal rule is to consider 20 feet as a minimum length for our edges.

This is entirely subjective, but I've found that for the design to make sense visually and in terms of the budget, 20 feet just seems to work. In more practical terms, a trough that's only ten feet long, say, might be difficult to design with adequate surge capacity.

That's a generalization, of course, and there can certainly be exceptions, but let's take a look at a typical 800 square-foot pool to illustrate. Say you want to lift a

quarter inch of water to flow over the edge of that pool: This computes to about 125 gallons at a time flowing over the edge. If the edge is 30 feet across, that flow can easily be captured in a traditional trough that stretches across the full 30 feet below the edge. The surge capacity on the same pool would be more difficult to manage with a shorter edge.

If the edge and trough are just ten feet long, the standard trough will be too small, which means you'll need to make the trough larger in dimensions other than length. With close edge tolerance, which I'll discuss below, calculating edge flow is really very easy. Again, the tough part comes in allowing for the surge capacity.

That re-dimensioning may not be visually desirable or practical from a structural standpoint. By the same token, if you're working with a design where the edge flows over into a large body of water – an open, shallow kiddie pool, for example – the concern over edge length may be irrelevant.

By the way, this set of considerations

Continued on page 50

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is another good reason to calculate displacement by surface area, because it forces you to acknowledge that you'll need to capture a given volume of water no matter the length of the edge or the edge detail. The flow rate may change, but the basic functionality of the system will be the same.

❑ **Tolerance:** This is perhaps the most critical of all the elements of a water-in-transit system, because without knowing your edge tolerances, you can't effectively calculate or even control the flow rate over the edge. As a rule, the lower your anticipated flow rate, the greater the need for tight tolerance across that edge. We prefer working with low flow rates, so we nail our edges, plus or minus, to within a sixteenth of an inch.

How difficult that is to achieve depends on the material. For my own backyard pool, for example, we built a 55-foot edge that's set in random stone – and we're flooding it with a one-horsepower pump on three-inch plumbing. The flow over this edge works out to something less

than three gallons per minute per foot. For many builders, that might seem like an impossibly low flow rate, but because we used a grinder to fine-tune the edge after it was installed, we've been able to accommodate that low flow rate consistently across the full length of the edge.

The flow rate you want over the edge will also vary widely depending on the effect you want to achieve. For systems that are viewed from the house side – that is, with the water falling away from the observer – you typically can't tell if the edge is flowing at 100 gallons per minute or two gallons per minute. The thought to bear in mind is that there's no real "standard" for flow rate – but there *is* a responsibility to ensure that whatever rate you target is being achieved on the full length of the edge.

Trouble can start quickly when you try to overcome a loose edge tolerance by simply pushing more water over the edge. Often, this involves moving water at or above recommended line velocities after the fact to achieve the necessary flow,

which can lead to increased energy consumption as well as to turbulence – the enemy of all water-in-transit systems.

Rule of thumb: Keep your tolerances tight enough so that the vanishing-edge effect works with a minimal flow rate – say, five gallons per foot per minute maximum – then work up from there if you want to achieve a waterfall effect by pumping up the volume.

❑ **Edge detail:** Virtually from the first of the vanishing-edge designs (and perimeter-overflow designs as well), there's been a debate over which way the edge should be angled.

We typically pitch the edge away from the pool unless observers are easily going to see the top of the edge wall. In that case, where the physical proximity of the focal points creates a situation in which observers will be looking down at the top of the wall, we acknowledge that you'll see the top of the edge and pitch it back toward the pool. You still see the top of the wall, but its visual impact is minimized.

SIMPLE TRUTHS: Water-in-transit systems are challenging for both designers and builders, and it's partly because there aren't many generalizations or formulas that make things easier. In my experience, in fact, each system must be approached individually, with no short cuts.





LINES OF SIGHT: There's nothing that says vanishing-edge effects work only with nosebleed or waterfront views. If the reflections work and there's an opportunity to tie the water into landscaped views, I'm all in favor of putting pools on flat or nearly flat lots.

This isn't quite a judgment call, but it's one that has more to do with aesthetics and appearances than with practicality, which leads us back to a set of considerations that really should come first in any project.

Back to Visuals

As I mentioned at the outset, whether you're thinking about a vanishing edge, a wet edge or a deck-level/slot overflow system, you need to start by thinking about aesthetics and very basic system functions.

I begin, for example, by looking at lines of sight to establish an elevation and location for the pool in relation to the home and the basic topography of the property. My thoughts turn to the practicalities of a water-in-transit system only if it makes visual sense, budget sense and sense for the way my clients want to use their watershape.

As it all comes together (and *if* it all comes together), I'm aware that lines of

sight are something I can control – not through the structure of the home, the orientation of the property or by a trick of eyesight, but rather by understanding the ways I can work with the pool's physical location, shape, size and elevation relative to those other factors.

As I examine a setting and consider its potential, I'm aware of the fact that there's no real point in building a water-in-transit pool of any kind if it won't work visually. I'm also keenly aware of the fact that water-in-transit designs are primarily about *reflections* – my touchstone when I consider placement and orientation of these watershapes relative to their surroundings.

We're all certainly familiar with vanishing edges that fall over nosebleed drops, often with echoing bodies of water in the distance. These projects may seem as simple as rolling off a log, but they work best

when the designer sets the outer edge in relationship to primary focal points that govern where the visual boundary exists. In other words, if you do things right, you modify the lines of sight with the presence of the pool structure itself – and the effect of water flowing over the edge serves to link the reflections on the surface of the water with the near or distant views to which the eyes are being led.

Hilltop edges with perfect, open vistas are great, but personally I enjoy designing vanishing-edge pools in conjunction with landscaping. I'm also working more and more with water-in-transit systems on flat or nearly flat lots. Plants, particularly large ones such as trees, offer wonderful opportunities to modify lines of sight, both by concealing views that are undesirable and by leading the eye to views you want to see by defining visual "corridors." In many ways, I prefer working in these settings be-

cause of the opportunities they offer to connect the structure, the reflections and the surface of the water more intimately with the surrounding environment.

As I ponder the possibilities, I bear in mind that perimeter-overflow designs offer effects similar to those of vanishing-edge pools through the dramatic appearance of water flowing seamlessly across the entire confines of the pool or even a section of it. I'm also aware that deck-level or slot-overflow systems don't work the same way: Where the other water-in-transit options lead the eye beyond the water's edge, slot overflows keep the eyes fixed on the edge itself.

All these factors must be weighed, discussed in detail with the clients and visualized in very clear ways before you get serious about how you're going to pull off the effect and make the system work.

Not Rocket Science

To be sure, water-in-transit systems

are more complex than many other types of watershapes, but they are not so difficult to execute if you keep the considerations I've discussed above firmly in mind as you proceed.

Because I've developed a reputation for knowing how to build these systems to a high standard, I've been asked many times to offer my opinion on projects where things have gone wrong. The trouble almost always comes down to a basic lack of understanding on the part of the contractor of proper hydraulic design, sufficient surge capacity or good edge tolerance.

I would suggest that if anything I've described above seems foreign to you, you're much better off steering clear of these designs until you learn more. If you *do* step up to the plate and take on a water-in-transit system, then begin that process with a clear understanding of your responsibility to your clients followed by careful execution of the fundamentals of good construction.

Edge Essentials

When it comes to creating a hydraulic system to run an edge effect, I always recommend setting up one that's independent from the pool's main circulation system.

In many cases, the flow of the primary system will be the same as that of the edge system. In those situations, there's a nasty cost-cutting tendency to think you'll be better off *combining* the systems and using only one pump and filter. The problem with that notion is that you now have to control whether you're drawing water from the surge tank or from the skimmers – which means that the suction side plumbing must be interconnected in some way.

As a rule in these water-in-transit systems, you should always use an atmospheric vacuum breaker to protect water on the discharge side, meaning that if the



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check valve fails, the vacuum will be broken and won't allow the pool water to back up into the surge tank.

In a shared system scenario, unfortunately, you can't protect the suction line in that way: When you cross-connect your suction lines and the check valve fails, the pool will drain independent of the protection system used on the discharge side. Everyone in this business should know that check valves do fail, and it's less a matter of *if* than it is of *when*. This is why we recommend creating edge circulation systems that are independent of the primary circulation system of the pool.

There are certain other mistakes that you need to avoid.

- Number one is locating the pump above the source. Assuming that the operating surge tank level is five feet below the pool, just imagine trying to block off all

of those suction grates and trying to flood the line uphill to the vanishing edge pump. It's a prescription for failure, which is why the pump should always be at or below the source — end of discussion!

- Number two is returning unfiltered water through the vanishing edge discharge. All this does is take the debris that collects in the surge tank and then returns that garbage to the pool, unfiltered, via the vanishing-edge return lines — thereby further shortening the life of any check valves in that part of the system.

- Number three is relying on a check valve to separate the surge tank or trough from the pool. We all know that check valves fail, and I can guarantee you that your surge tank will not accept the full 20,000 gallons of the average pool's water (unless you've gone way overboard in

upsizing your system against the possibility of catastrophe).

If you have check-valve failure, the water will pass by the overflow in the surge tank like it's not even there. It will flood the surge tank and, in the case of a vanishing edge, will completely flood whatever slope or level ground is adjacent to the catch basin. The erosion that occurs, left unaddressed, is a good way to lose the entire structure — all because you chose to rely on a device that is certain to fail at some point in time.

I see atmospheric vacuum breaks as cheap insurance. If you don't know what one is — or, worse, choose not to use one because of their tiny cost — then I'd suggest you have absolutely no business in trying to build a water-in-transit pool!

— S.P.



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The features, traditions and character of Chinese garden design are generally unfamiliar to most Westerners – and that’s a shame, says watergarden designer Rick Anderson, because they are an art form all their own. He recently traveled to China to learn more about these unusual spaces and to explore the natural beauty of the Yangtze River’s valley and here shares his observations and inspirations.

By Rick Anderson

Many years have passed since I first saw pictures of China, but my desire to travel to the Giant of the Orient has never waned.

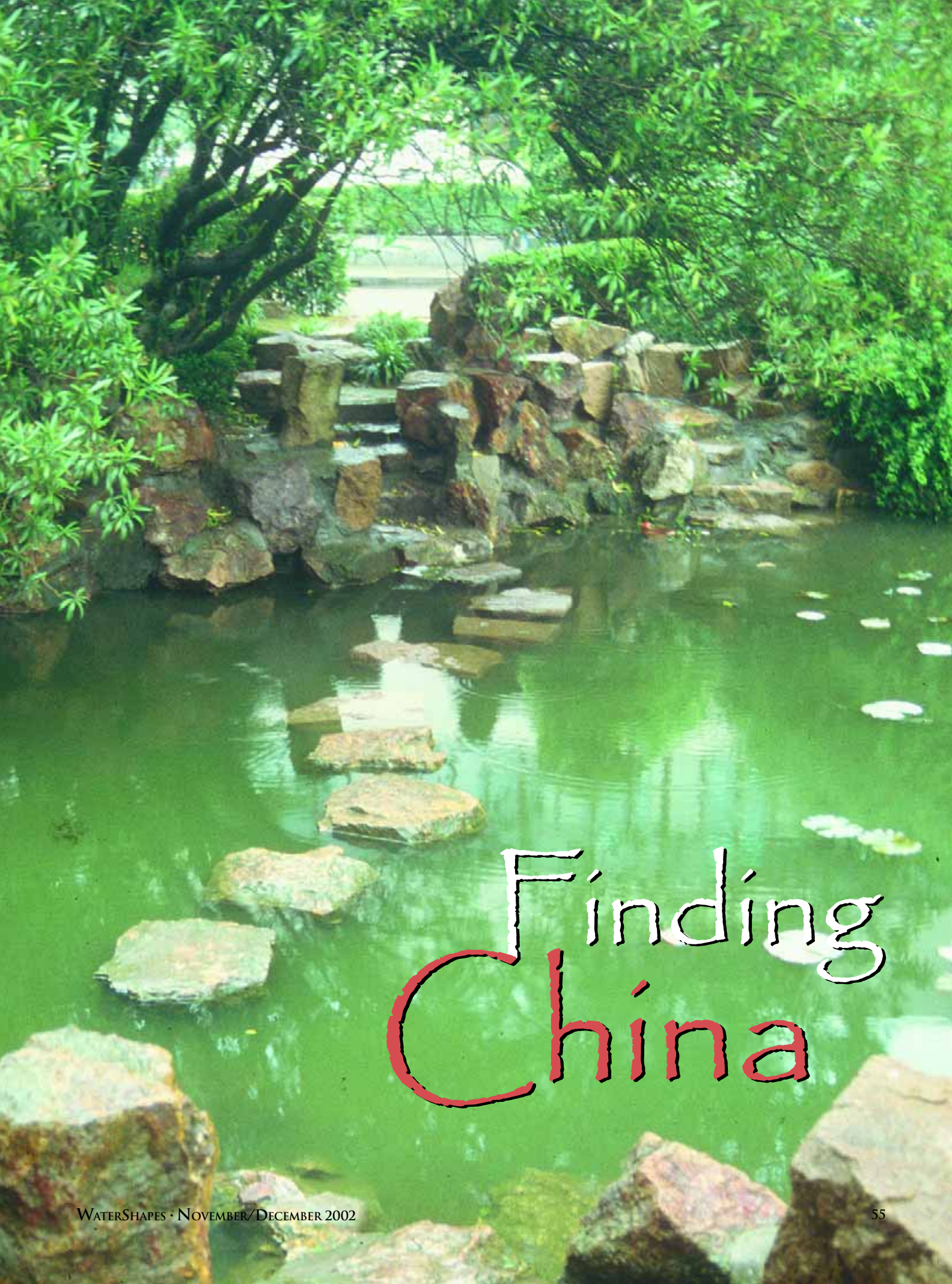
In recent years, in fact, that interest grew ever stronger as I watched all the new information emerging from China as it has slowly opened itself to the Western world. I’ve been particularly fascinated by documentaries on the Yangtze River and The Great Dam that China is building to manage its floodwaters.

This past spring, I visited China to see its amazing gardens with my own eyes and travel down the Yangtze through the fabled Three Gorges and the Lesser Three Gorges. I went seeking inspiration and came back with more than my quota of thoughts on the mysteriousness and tantalizing vagueness with which so many Chinese gardens are put together.

Garden Forms

Perhaps because they’re so unfamiliar to Western eyes, people – including many otherwise well-informed students in seminars I’ve taught – tend to lump Chinese gardens in with the much more familiar Japanese gardens in a general classification as Oriental or Asian gardens. Nothing could be farther from accuracy.

Before I move forward, I need to state that I am



Finding China

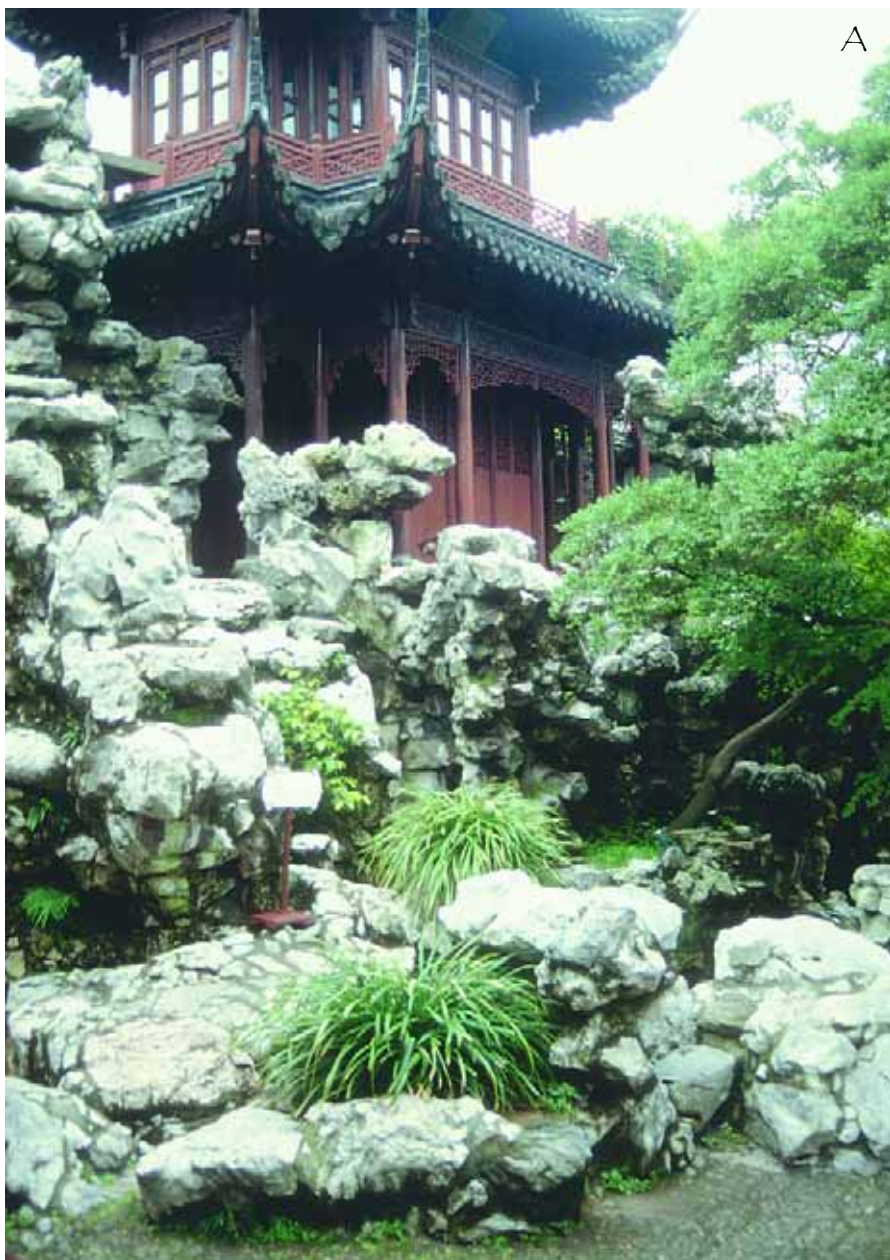


not an expert in this area of design. I am an ardent observer of these spaces, however, and have managed to learn a few things about Chinese gardens and their designers through the years. (I was accordingly pleased to find that my tour reinforced much of what I know about them!)

In general, Chinese gardens are built around three main components:

Architecture and Structure: The Chinese garden is almost always located in a courtyard or pavilion-type setting. Indeed, the only cases in which they break beyond the confines of walls is with imperial gardens or with the gardens of the wealthiest of the wealthy. Given the fact that walls are so dominant, the openings, gates, windows and wall copings all take on special significance.

Continued on page 58



A



B



C



D

Photos by Rick Anderson

This is the scene looking up at the summer pavilion at Yu Yuan in Shanghai (A). It was important in classic Chinese gardens that the spaces be composed as if they were paintings. Prominent here is a *T'ai Hu* rockery that at one time had water flowing over part of it.

The pictorial approach is also seen in a viewing pavilion and walkway near one of the larger ponds at Yu Yuan (B). Just as picturesque is a unique pat-

tern in the paving here that gives the impression of some form of living creature (C). This is unusual: Most classical paving takes on basic geometric shapes.

More typical are the fantastic *T'ai Hu* stones, prized for their incredible (and almost grotesque) formations (D).



This is a courtyard garden at the Chongqing Folk Culture Village. The rockery here serves as a dominant focal point. (In my observation, no one seems to have much objection to pea-green water.)

I was consistently impressed by the kind of emphasis Chinese garden designers placed on their *T'ai Hu* stones: The effect can best be described as placing the rockery in such a way that it will command and receive its proper respect.



A contemporary fountain at the city overlook in Chongqing was typical of many "modern" watershapes in China in that it didn't work. During my visit I saw about 40 such fountains, and only two were actually working.



Brave Old World

Throughout my career, I've found that many things separate exceptional design professionals from average practitioners. For instance, a great many designers (and I count myself among them) have spent a tremendous amount of time studying the works of masterful designers, past and present.

Study is one thing: In my opinion, *curiosity* is just as important, if not more so.

Indeed, the most creative and inspiring designers I've ever seen have spent and are always spending an extraordinary amount of time looking at the world in which we live to derive ideas and inspiration. In this sense, you might say that "design education" is a matter of accumulating *life experiences*. By doing, exploring, tasting, experiencing and immersing ourselves in things that are different and exotic and foreign, we change and grow.

My point is that the mere fact that you may have worked in design for 10 or 20 or however many years does not necessarily make you any better at your work. Instead, I believe that the only way to grow as a professional is to look outside your immediate frame of reference and embrace the world around you.

Consider the photographs on display in the accompanying article: They come from places that are worlds away from the usual orbit or interests of Westerners – and they offer a means of exposing ourselves to new information, expanding our horizons as professionals (and people) and stretching our abilities to create good designs and produce quality work.

One of the things I like most about *WaterShapes* is the fact that it displays the works of many wonderful designers – Fallingwater by Frank Lloyd Wright, Katsura Rikyu in Japan and other projects from around the country and across the globe. I believe that this coverage shows us that there are infinite possibilities when it comes to creating garden spaces and using water within them. By looking to the unfamiliar, we see a variety of ways to organize and manipulate spatial relationships and all-new ways of using materials.

Chinese gardens are in fact more varied and complex than any single article could hope to capture, but my hope is that you'll find one small thing to take back to your own projects or see one small strategy these gardeners and artists used in establishing the atmosphere of their spaces. Beyond that, I'm hoping there's enough to go on that you'll be curious and inspired enough, as I was, to hop on a plane and go see these gardens with your very own eyes.

—R.A.

In most of these gardens, the paving also plays a prominent role, with highly detailed work in a variety of geometric patterns. The paving consists in many cases of small bits of material – seconds, leftovers, discards, scraps from other construction – that the craftspeople have woven together in unique and eye-catching ways. Space permitting, the seating areas are typically set under roofs and/or beneath stand-alone pavilions. The higher the social status of the resident, the more elaborate and ornate are the materials and craftsmanship of these structures.

Everything revolves around these limiting architectural features in the gardens of the middle and

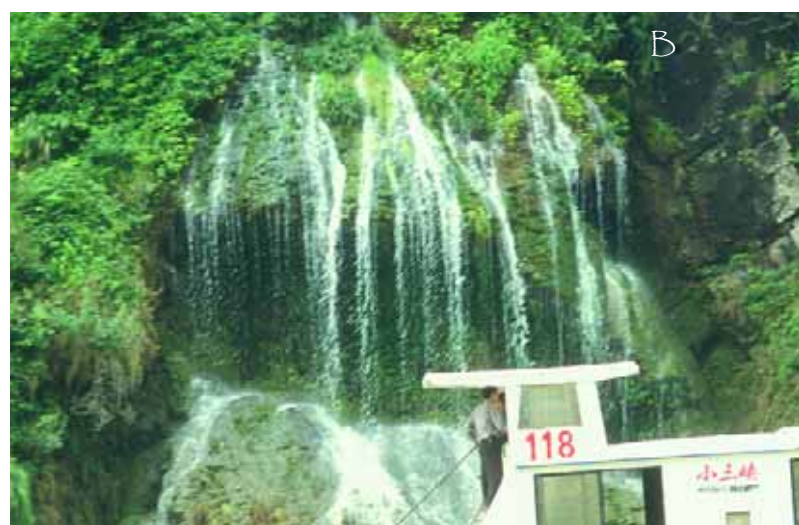
upper classes – a sharp distinction from Japanese gardens, for example, where borrowed views of distant landforms are often a defining visual component. (As I mentioned, only in imperial gardens were Chinese landscapes shaped with vistas in mind.)

► **Plant Selection:** Plants in Chinese gardens are chosen to add structure and depth and accents in what can best be described as a supporting or background role. Some plants, for example, are chosen solely for their seasonal color and their roles in how the garden looks through each season of the year.

Among the plants chosen for these purposes in a great many classic Chinese gardens are bamboo, wil-



A



B

Chinese gardeners certainly took inspiration from their natural surroundings. This Temple fits beneath a cliff along the Yangtze River (A) and unfortunately will be inundated when The Great Dam – the most expensive construction project in world history – is completed and the Yangtze rises behind it. The Chinese government is relocating some of these treasures, but most will be lost in the flooding. Such a loss of heritage is breathtaking even compared to the awesome challenge of relocating millions of people and losing some of the country's richest farmland.

Views such as this (B) will be lost when the dam is complete. All the waterfalls will be gone, most of the cliff's face will be submerged and the entire area will become part of an extensive system of lakes.



Yue Yang Mansion a fine example of a classical Chinese estate that features both a house and a garden. This is a typical rockery and waterfeature, but note that the classic Chinese garden was so much about stone that this greenery would never have been allowed to overtake the rockery in this way.

How Good Do You Want To Be?

Genesis 3 Schedule

In the coming months, David Tisherman, Skip Phillips and Brian Van Bower are hosting two very special Genesis 3 events: The group's second Fountain School and the latest in the series of increasingly popular Level I Schools.



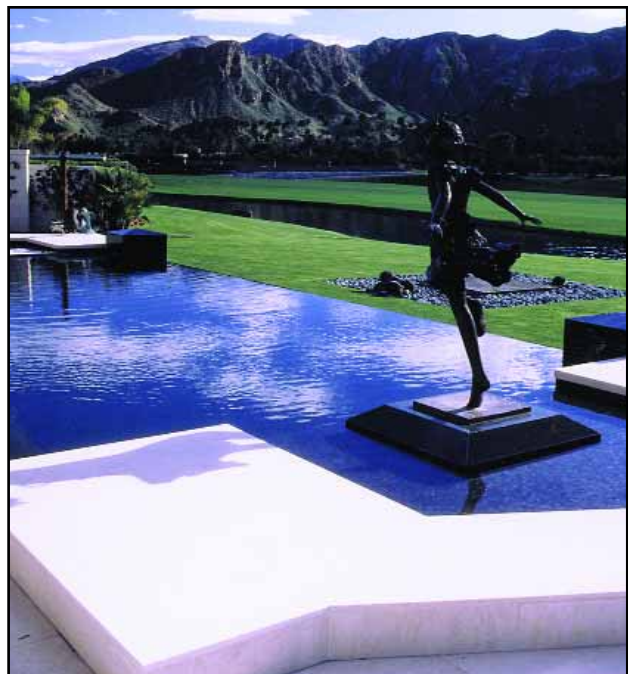
December 4-8, 2002
Toronto, Ontario, Canada
Genesis Fountain School

This school, hosted by Crystal Fountains, has a special focus on fountain design. Topics to be covered include selection and use of appropriate water effects, fountain hydraulics and specialized lighting design. Open to all applicants, the school also features a hands-on visit to Crystal Fountains' facility, as well as a guided tour of Toronto's fountains.

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low, pine, peony, mums and cherry.

► **The Rockwork:** No Chinese garden could ever be complete without the stone or stone grouping that make up its rockery – the key, defining characteristic of the vast majority of classic Chinese gardens.

The importance of this feature cannot be overstated. These fantastically shaped stones, called *T'ai Hu* because most of the important ones come from a lake of that name, have been worn by time and the elements and are prized for what seem to Western eyes to be near-grotesque shapes. (On my trip, I spent a lot of time photographing these stones. This amused my hosts, who seemed puzzled that a Westerner would pay so much attention to their “rocks.”)

In the older gardens, the designers (many of whom also were painters) spent a good deal of time putting these limestone boulders into fantastic shapes and formations that brought strength and harmony to the garden spaces. The tradition is so powerful that the same attention is paid to rockeries in new gardens as well and to how the stone formations work in relation to the rest of the space.

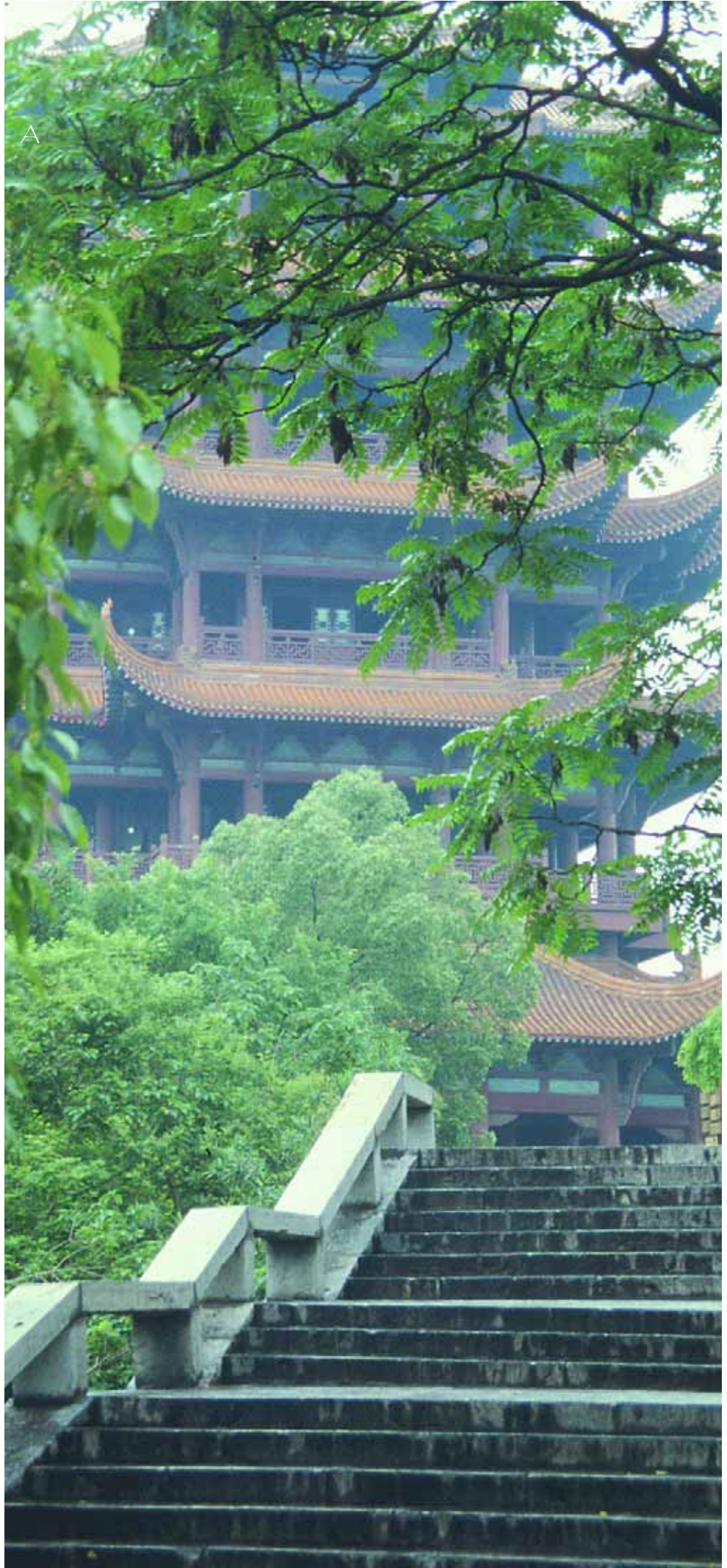
Without these stones, it seems, no space great or small, old or new, can truly be considered a Chinese garden.

Watershapes

It is generally in association with the design and construction of the rockery that we find water in Chinese gardens.

In some cases, particularly in larger gardens of the very wealthy, Chinese gardens feature ponds of varying sizes and shapes. But many of the watershapes I saw were small, old and tired – and, unfortunately, many had fallen into disrepair.

Continued on page 62





The Yellow Crane Tower in Wuhan is part of one of the most famous gardens in China – the place where the great poet Li Po went to compose his most famous works (A).

Looking down from Yellow Crane Tower into the main pavilion area, you have the opportunity to see Chinese gardeners' approaches to elevation changes, water use, structures, garden rooms, *Tai Hu* stones and plant selection (B).

A large, red granite sculpture at Yellow Crane Tower is known as the "Returning Cranes" – and took ten sculptors more than 30 months to complete (C). It forms the perfect foil for this rounded Chinese bridge (D).



We see a quiet simplicity in the pavilion at Longting Park. Notice how the designer wants you to perceive the composition as though it was a painting and how either the bridge or the lotus serves as the compositional foreground.



This is a typical garden entrance guarded by Fu Dogs. The space may look stark at first glance, but there's a distinct beauty in its simplicity.



Like much of a country where the streets are old and the paths are old and the soil has been worked for thousands of years, these watershapes had seemingly been worn away by years of accumulated time. Even so, the gardens are respect-

fully and diligently maintained – and the context and mood they create helped me visualize the role of water and hear what must have been its wonderfully naturalistic and evocative auditory contributions to these spaces.

As with most anything you study, an examination of Chinese gardens reveals a world unto itself, one filled with complexity, tradition and variety. The photographs reproduced here are intended as an introduction – one that will, I hope, lead you to further explorations on your own.



At Kaifeng, we see an example of the ancient placement of *T'ai Hu* stones and the contemporary fountain, with what we would consider a more Western planting scheme.

I saw this combination of new and old forms many times in China. Regrettably, neither contemporary waterworks nor older ones tended to be in working order.



Chinese garden designers excel at building these wall openings and staging focal points for observers (A). Here at Riverside Park in Kaifeng and elsewhere, this conjures not only the interest in the wall itself, but inspires an attraction that pulls you into the scene (B).



Here's a contemporary watershape (just a year old) on the grounds of Henan University in Kaifeng. I found no skimmer nor any system that seemed to be intended to make the water move in any way – and again, the green water didn't seem to bother anyone. Most Americans would see this as an eyesore, but those I spoke with did not see or find any fault.

In this and in so many other ways, Chinese gardens are simply "different" from what we expect to the point that they defy many of the horticultural and aquacultural beliefs we teach and follow here. In some places, for example, I found Koi ponds that seemed to lack any filtration or circulation system – once more to nobody's distress. All of the watershapes I observed were this way, except for the pools in front of the Great Hall across from Tiananmen Square, where the fountain was running – and even there the water clarity was just fair.

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Timeless



Most people know Maya Lin for her bold design of the Vietnam Veterans Memorial in Washington, but watershapers in particular should become familiar with a range of her other works as well. For nearly 15 years, reports William Hobbs, his company has been involved in producing intricate water effects for the famous artist, whose works draw fascinating connections between observers and the mysteries of time and nature.

By William Hobbs

The marriage of water and art can be extremely powerful and evocative, especially in the hands of a great designer. One who has taken the use of water to sublime and fantastic levels is Maya Lin, the artist who rose to prominence as an undergraduate student with her design for the Vietnam Veterans Memorial in Washington, D.C.

At Hobbs Architectural Fountains, we have been privileged to participate in bringing Maya's aquatic visions to life. Those works have often been ambitious and innovative and have required us to be just as ambitious and innovative in developing ways of moving water that bring her ideas to life.

Our partnership of design and technology in the creation of monuments and public works of art began more than a decade ago. The projects shown here display just some of our collaboration through those years.

Weaving Experiences

Whether they include water or not, the

works of Maya Lin are seldom simple in concept or theme. Rather, she sets up layers of motifs and meanings that are often drawn from nature as well as human history. Quite often, they're touched by an acute sense of time, the passage of time and the indeterminacy of occurrences in nature and history.

Let me illustrate that sense with her most famous work, the Vietnam Veterans Memorial, where she presents the names of those who lost their lives in the conflict in chronological order of their deaths. Thus, the wall creates a narrative beginning in 1959 and ending in 1975, and the passage of time is represented specifically by the horrific loss of human life suffered during the war.

In this way, a permanent structure, anchored firmly in the earth, captures a fleeting progression of events that are still affecting lives to this day.

A similar effect is achieved with her Civil Rights Memorial, which strings together events from the landmark court case of Brown vs. Board of Education in

1958 to the assassination of Dr. Martin Luther King Jr. in 1968 and defines a crucial span in the history of race relations in this country.

In many of her other works, the sense of the moment is less tied to such specific historical time frames and becomes more evocative of the random procession of events within nature itself. Consider, for example, the cycles of freezing and thawing that lend profundity to the American Express Winter Garden depicted in this article – a distinct demarcation of time achieved through the physical presence of water.

In many cases, the execution of such ephemeral concepts has required an incredible degree of technical know-how and flexibility and creativity from us on the Atlanta-based staff of Hobbs Architectural Fountains. It is indeed rare and wonderful to participate in such projects, where water technology is used in service to such intellectually ambitious and distinctly artistic designs.

Impressions

Civil Rights Memorial



Photos by John O'Hagan, courtesy of Southern Poverty Law Center



Maya Lin first contacted us about this project early in 1988, explaining that she wanted to create a wetted surface and generate an exact flow of the water for an artistic effect. Naturally, we were excited by the prospect of working with such a renowned designer, but we also were a bit concerned in this, our first project together, that what she envisioned might be difficult if not impossible to attain.

Working systematically, we set up a full-scale prototype. The first challenge had to do with the fact that the water table contained an offset core. When flooded, this offset created an uneven flow, and it took many iterations of cutting and staging the internals of the core as well as work on the table itself to generate smooth flowing waters over the entire surface.

The second challenge was setting up the flow so that the water achieved an acute reverse angle as it fell over the edge of the table. Maya wanted to see random droplets once the water had doubled back on itself. Through analysis and testing with the prototype, we found the texture we needed at the edge and the exact radial cut required to create the desired effect.

Then we had to deal with the inscription on the wall behind the table and how to make water flow where Maya wanted it to flow – a surprisingly difficult engineering challenge. Obviously, carving letters into stone creates irregularities for water to flow over, so the voids had to be filled with a compound that reduced the disruption. From there, we decided how to handle the flow of the water into the narrow basin – and the whole project came together beautifully.

Montgomery, Alabama

American Express Winter Garden



Photos by Peter Wong, courtesy of American Express Financial Advisors



Initially, this project seemed to be little more than a kind of glass water wall we'd executed several times before, but as Maya moved forward with her description, we soon recognized that this was to be something entirely new and unique.

Her concept was to generate a water wall approximately 25 feet high and 40 feet wide that would freeze in the winter – a wall, she told us, that also was to be integrated into the building. Inside, she set up a rolling, hill-like effect in the floor itself, flanked by an L-shaped pool. She wanted sound from the water, but no motion that might disrupt reflections, which we achieved by creating a “disturbance” under the rolling-hill floor that generated sound that reverberated off the walls but caused little or no movement as it moved into the reflecting pool. The pool itself was set both inside and outside the wall and seemed to be one vessel. In reality, however, there were two separate systems.

Outside, Maya wanted the waters to flow majestically down the glass when the temperatures were above freezing – and create various patterns of ice on the glass when temperatures dropped. This was no small challenge: The water wall was two sided, after all, and one side was part of a heated space. On the outside, moreover, we had to control the level and thickness of ice formation as a safety and structural issue.

The solution was an “ice breaker” system: Through a network of freeze sensors and temperature controls, two separate pumping systems controlled the amount of ice on the wall and maintained fluid movement of water in the catch basin. The net effect: an impressive display of ice that constantly changes.

Minneapolis, Minnesota

Principle Group Financial Headquarters



Photos courtesy Maya Lin Studios



Maya brought us in on this project, “A Shift in the Stream,” in 1996. Her concept was to create a glass wall on two levels of a three-story lobby that would feature small, narrow streams of water flowing down the glass with what she described tantalizingly as an “accidental quality.”

Our task was to generate those small flows of water in such a way that they would vary constantly in movement and direction as they flowed down the glass – and to do so intermittently. We achieved the latter by using solenoid valves hidden in the lobby’s ceiling. This allowed us to use a programmable controller to generate various on and off times for the flows.

The random flows were harder to achieve, which led us to set up another full-size mock up in our Atlanta studio. Maya joined us in generating options and valving solutions for achieving the level of water manipulation and the various flows she wanted. We also took the opportunity to test the joints between the glass panels and eliminate any water leakage or any potential flow behind the glass that might damage the wall.

On location, the cascading water appears to enter the floor of the second level of the lobby and continue down to the first level, where there’s a 40-foot long fracture in the wall. This fracture shifts the flow of water from the vertical drop above to a horizontal flow below, where various elevations constantly move slightly up and down across the entire length of the feature. As you approach the wall, you can hear the subtle sound of water flowing.

The challenge here was putting moving water behind the wall, with the attendant potential for damage to the wall over a period of time. After much discussion and several reviews, we created a trough system that minimized the risks.

De Moines, Iowa

Monroe Center



Photos by Balthazar Korab, courtesy of the Frey Foundation



The fountains for the Monroe Center, which Maya has dubbed “Ecliptic,” consist of two separate outdoor display systems and became a reality in 2000. The first is a circular granite disc set above grade. Water flows over about half its surface before falling off a knife-edge – a signature feature in many of Maya’s watershapes and something with which we were familiar.

In this case, however, the treatment was different: Typically, we’d flooded these features from the center and allowed the water to project outward in all directions. In this instance, we were flooding the disc from one side and needed the water to flow evenly across the surface.

Clearly, the stone had to be perfectly even to achieve this effect. Beyond that, we needed to develop a small discharge trough for the edge of the circumference – something we could hide beneath a granite capstone along with a fiberoptic cable. As water is introduced to this trough, it fills very slowly and releases the water in a controlled, smooth manner into a notch cut on the edge of the stone.

When turned on, the fiberoptics, which are also set in the narrow catch basin at the base of the feature, disperse a white, glowing light across the surface of the stone as well as its base, lending a serenity to the scene that couldn’t have been achieved with conventional directional lighting.

The second feature is at the opposite end of the complex – another raised circular fountain, but one that uses a fog system to create unique and constantly changing effects. When the fog is not in operation, all you see is serene reflections. When it’s on, anything from changes in the humidity levels to drafts bring variety to the watershape – with fiberoptics adding a warm, mysterious glow.

Grand Rapids, Michigan

COLORED QUARTZ AGGREGATES

Circle 100 on Reader Service Card



ECLIPSE COLORED AGGREGATES offers natural quartz products for use in durable pool finishes. Acid-insoluble and abrasion-resistant, the aggregates feature pigments permanently bonded to the quartz substrate. They come in a wide range of colors and sizes, allowing for greater control in creating finishes that enhance reflections and complement a range of pool environments. **Eclipse Colored Aggregates**, Weston, Ontario, Canada.

FOG SYSTEM

Circle 102 on Reader Service Card



MISTAMERICA manufactures PoolFog, a system that atomizes water into billions of ultra-fine droplets to lend atmosphere to any watershape. Intended for use with pools, fountains, waterfeatures, landscapes, zoo environments, volcano effects and amusement-park rides, the system works quietly and

smoothly under demanding conditions and costs just pennies per hour to operate. **MistAMERICA**, Scottsdale, AZ.

ENAMEL-STREAKED GLASS TILES

Circle 101 on Reader Service Card



BISAZZA NORTH AMERICA has introduced Smalto, a new glass-tile collection that features streaks of enamel within transparent glass. Using an ancient technique favored by Venetian glassmakers, the enamel is mixed into the glass to create subtle visual effects. The result is a top-quality matrix with vivid clarity and brilliant color. The tiles are offered in 18 colors and come in a 3/4-inch size. **Bisazza North America**, Miami, FL.

STAINLESS STEEL POOLS

Circle 103 on Reader Service Card



NATARE manufactures the Uniwall system for swimming pools. The stainless steel walls accommodate varying water depths as well as special configurations and program needs while offering watertight performance and low maintenance whether elevated or set inground. The system features an integrated perimeter recirculating system for deck-level, semi-recessed or fully recessed designs. **Natare**, Indianapolis, IN.

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ENGINEERED-WOOD DECKING

Circle 104 on Reader Service Card



Weyerhaeuser, Santa Clarita, CA.

WEYERHAEUSER manufactures ChoiceDek Plus, a stable, engineered-wood decking product that never needs sealing or treating and is virtually waterproof and maintenance-free. Designed for beauty and durability, the subdued-gray decking comes with a range of accessories, including handrails, balusters, trims and post wraps. The 6-in. planks come in 8-, 10-, 12-, 14-, 16-, 18- and 20-ft. lengths.

FINISH-INSTALLATION VIDEOS

Circle 105 on Reader Service Card



SGM has produced a set of videos demonstrating proper installation techniques for its line of pool finishes. Designed to help plastering crews get the job done on time and on budget, the videos cover application of the company's Diamond Brite non-fading, polymerized quartz-aggregate finish; its River Rok exposed-aggregate system; and its polished Durazzo finish. SGM, Pompano Beach, FL.

WEATHERED-LOOK RETAINING WALLS

Circle 106 on Reader Service Card



VERSALOK manufactures the Weathered line of segmented retaining walls. Designed to complement historical surroundings, the wall units have a color and texture similar to old limestone while offering long-lasting durability. The pinned, solid-concrete units are environmentally friendly and virtually maintenance-free while providing a high level of structural integrity. Versa-Lok, Oakdale, MN.

VERSALOK manufactures the Weathered line of segmented retaining walls. Designed to complement historical surroundings, the wall units have a color and texture similar to old limestone while offering long-lasting durability. The pinned, solid-concrete units are environmentally friendly and virtually maintenance-free while providing a high level of structural integrity. Versa-Lok, Oakdale, MN.

PVC CHECK VALVES

Circle 107 on Reader Service Card



VALTERRA PRODUCTS has released a new series of check valves designed to be used where backflow is not desired. The new models are available in spring or swing configurations for 1-1/4-, 1-1/2- and 2-inch plumbing lines. They also come in two colors: PVC white and/or PVC clear. Valterra Products, Mission Hills, CA.

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OF INTEREST

ROCK WATERFEATURES

Circle 108 on Reader Service Card



CASSTART offers WetRocks, cast-concrete rock features designed to provide natural waterfalls in any part of a landscape. Water delivery and return units come with quick connects for fast, leak-free installation, and each component part is set at a striking angle to match natural rock formations. The systems also feature water-flow controls for speed adjustment and air injection to enhance white-water effects. **Casstart**, Tucson, AZ.

MOSAIC TILE DESIGNS

Circle 110 on Reader Service Card



ARTISTRY IN MOSAICS has published information on its handcrafted designs in ceramic mosaic tile. The six-page, full-color pamphlet depicts more than 50 standard patterns, including mermaids, angelfish, dolphins, sailfish, seahorses, turtles, crabs, reef scenes and other aquatic accents. It also describes the company's custom-design capabilities, including logos, banners, flags and more. **Artistry in Mosaics**, Fort Pierce, FL.

MANUAL SAFETY COVER

Circle 109 on Reader Service Card



POOLSAVER manufactures Novaroll, a safety pool cover system that exceeds ASTM standards and offers quick and easy removal with a simple roll-up device. Secured to the deck using a simple system of anchor bolts and tension straps, the cover can be used in winter or year 'round and doesn't require modification to the pool, installation of a track system or any additional service. **Pool saver**, Walnut, CA.

POOL/SPA CONTROLS

Circle 111 on Reader Service Card



INTERMATIC manufactures the Model P1353ME, a 24-hour, three-circuit, programmable pool/spa control system. Available with either wired or wireless remote controls, each switch can be programmed for up to three on/off cycles per day. The system has a freeze and fireman switch for safety, and countdown and override features allow cycle interruptions for pool service. **Intermatic**, Spring Grove, IL.

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RESIDENTIAL/LIGHT-COMMERCIAL POOL HEATERS

Circle 112 on Reader Service Card



LOCHINVAR offers five models in the EnergyRite² line of pool/spa heaters. Designed for residential or light-commercial installations, the heaters range between 150,000 and 399,999 Btu/hr with 88% thermal efficiency ratings and multiple venting options. Each features a sealed combustion chamber for precise mixing of air and fuel and reduced potential for flame roll-out or pest infestation. **Lochinvar**, Lebanon, TN.

WATER TREADMILLS

Circle 114 on Reader Service Card



SPECK PUMPS offers the Badu-Jet and Badu-Stream treadmill systems for pools and spas. Capable of creating currents in excess of 5,000 gpm, the jets are adjusted with controls mounted on the face of the jet housings to provide resistance for a therapeutic walk, jog or swim – long-distance workouts with no turning around. Also,

a hose can be attached to a jet nozzle to create a massage effect. **Speck Pumps**, Jacksonville, FL.

CHLORINE-GENERATING SYSTEMS

Circle 113 on Reader Service Card



ECO-MATIC offers an alternative to the use of packaged chlorine through an electrolytic process that converts common salt into sanitizing chlorine. The system controller is connected to the same power source as the pool pump and regulates the electrolytic cell to keep the water safe, crystal clear and free of any bacteria, viruses or algae – without any residues or unwanted by-products. **Eco-Matic**, Newport Beach, CA.

RUSTIC-LOOK RETAINING WALLS

Circle 115 on Reader Service Card

ROCKWOOD RETAINING WALLS offers Cottage Stone, a system of lightweight, interlocking blocks that establish automatic setbacks and perfect alignments. Made of high-strength, low-absorption concrete, the rustic-look blocks come in a variety of earth-tone colors and are designed for use in terraced gardens, tree rings or retaining walls as high as 2-1/2 feet. **Rockwood Retaining Walls**, Rochester, MN.



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DECK-STAMPING SYSTEM

Circle 116 on Reader Service Card



look. **Mortex Mfg. Co.**, Tucson, AZ.

MORTEX MFG. CO. has introduced Systex Stamp, a product that enables contractors to add stamped patterns and new colors to existing concrete decks and walkways. Featuring virtually limitless color and pattern possibilities, the three-step system includes a bonding agent, the stamp material and a clear sealer coat and adheres to clean, sound concrete substrates for a fresh, custom

DIGITAL LIGHTING SYSTEMS

Circle 117 on Reader Service Card



COLOR KINETICS has published a brochure on its ColorScape lighting systems for inground pools. Using the company's Chromacore technology, the lights use a microprocessor to mix red, green and blue LEDs to produce a wide array of colors and color effects. The brochure highlights ease of installation, long life, low maintenance and low power consumption as well as brilliant color. **Color Kinetics**, Boston, MA.

MODULAR DIATOMACEOUS-EARTH FILTER

Circle 118 on Reader Service Card



STA-RITE has introduced the System 3 Mod DE Filter. The system marries the company's balanced-flow technology with well-established diatomaceous-earth filter technology to deliver superior water clarity. The new DE modules, available in 60- and 72-square-foot configurations, fit within the popular System 3 tank. In addition, the filter is backwashable, so it can be used with or without valves. **Sta-Rite**, Delavan, WI.

REBAR CUTTER/BENDER

Circle 119 on Reader Service Card



HITACHI POWER TOOLS offers the VB16Y, a portable tool that simplifies rebar cutting and bending on the job site. The tool does the work, but the operator has control over the velocity and angle at which the steel is bent. Precision bends are preset using reference marks on the bending plate and are completed in seconds for up to No. 5 grade 60 rebar at maximum angles up to 180 degrees. **Hitachi Power Tools**, Norcross, GA.

HITACHI POWER TOOLS offers the VB16Y, a portable tool that simplifies rebar cutting and bending on the job site. The tool does the work, but the operator has control over the velocity and angle at which the steel is bent. Precision bends are preset using reference marks on the bending plate and are completed in seconds for up to No. 5 grade 60 rebar at maximum angles up to 180 degrees. **Hitachi Power Tools**, Norcross, GA.

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WATERFALL SYSTEMS

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ROCK FORMATIONS offers literature on RicoRock structural waterfall systems. The 24-page, full-color booklet describes the basic waterfall system before featuring panel systems used to create a range of

water effects from small, 3-foot waterfalls to much larger structures that incorporate slides or grottoes. The booklet also displays boulders, flat castings, veneers and custom-fabricating capabilities. **Rock Formations**, Fontana, CA.

EIGHT-PORT CLEANER VALVE

Circle 121 on Reader Service Card



CSI-CARETAKER SYSTEMS introduces the Ultraflex fluid-distribution valve. Designed to assist the company's Caretaker 99 in-floor pool-cleaning system in cleaning more effectively

and quickly than ever before, the valve features eight 2-inch ports and a programmable controller capable of operating cleaning systems with smaller pumps and shorter run cycles for greater energy efficiency. **CSI-Caretaker Systems**, Scottsdale, AZ.

LANDSCAPE LIGHTING SOFTWARE

Circle 122 on Reader Service Card



KICHLER LANDSCAPE LIGHTING has released imaging software for landscape lighting. The system allows for easy insertion of

preset lighting patterns into landscape scenes to create realistic nighttime lighting effects. The company's entire fixture catalog is included, along with a voltage-drop calculator, on-screen tutorials, and automated generation of bills of materials and pricing. **Kichler Landscape Lighting**, Cleveland, OH.



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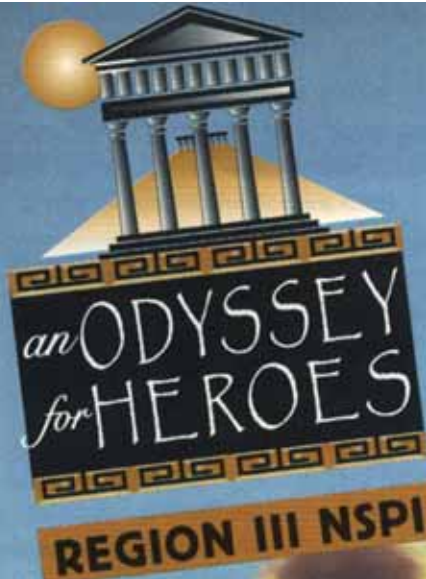
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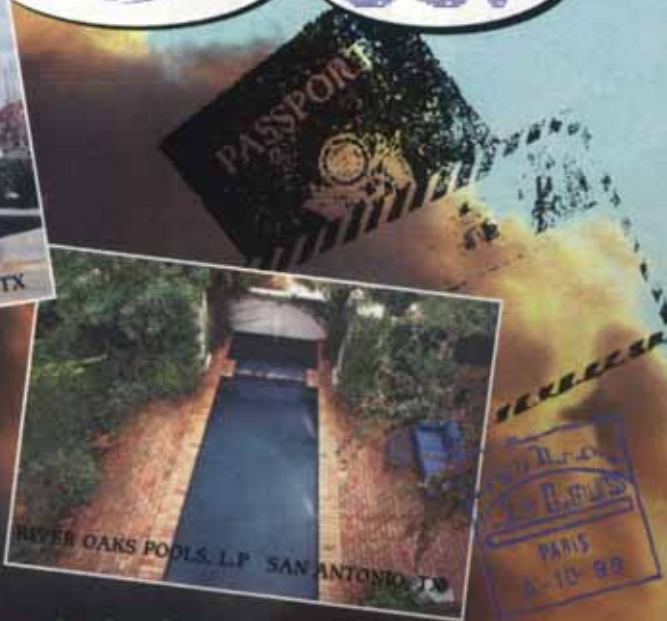
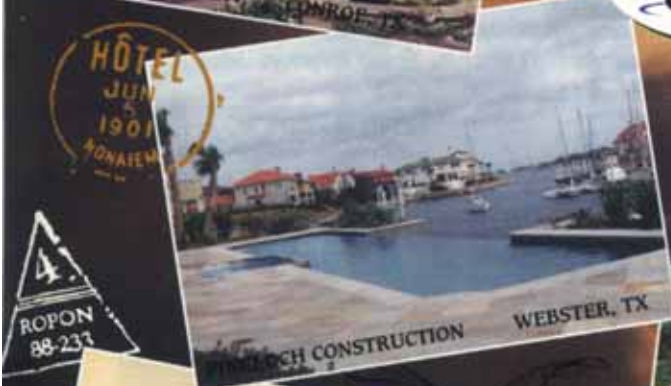
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OF INTEREST

PEBBLE POOL FINISH

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ULTRA POOL COATINGS offers Pebble Plus, an attractive, durable, colorfast and chemical-resistant plaster mix for use in all types of swimming pools. Easy to clean and maintain, the finish is designed with a unique chemistry that ensures its physical and mechanical performance. It comes in six distinctive colors – White Mist, Sandy Coral, Ocean Blue, Black Pearl, Sea Breeze and Golden Reef. **Ultra Pool Coatings**, Woodbridge, Ontario, Canada.

DECORATIVE TREE GRATES

Circle 124 on Reader Service Card



NEENAH FOUNDRY CO. offers a complete line of decorative tree grates. Made of cast iron and designed with apertures that can be expanded to accommodate tree growth through the years, the grates come in square, rectangular and round configurations or in combinations of standard shapes. They are also available with removable sections so sub-grade lighting fixtures can be used. **Neenah Foundry Co.**, Neenah, WI.

INTERACTIVE PLAY FEATURES

Circle 125 on Reader Service Card



EMPEX WATERTOYS has announced the availability of Aquatons, whimsical waterfeatures specifically designed for applications with no standing water in which small children can interact with flowing water. The devices, which can be operated by sequencing controllers and come with a lifetime warranty against rust, have no moving parts and offer the simplest kind of interactivity. **EmpeX Watertoys**, Uxbridge, Ontario, Canada.

HIGH-PRESSURE CONCRETE PUMP

Circle 126 on Reader Service Card



PUTZMEISTER has introduced model BSA 2110 HP-D, a high-pressure, trailer-mounted concrete pump specifically engineered to handle jobs extending up to 800 feet from pump to outlet. The unit features a 21.2 cubic foot hopper and runs at 3,190 psi to move a maximum of 143 yards of concrete per hour. The pump comes in diesel and electric versions and the trailer has heavy-duty tandem axles. **Putzmeister**, Sturtevant, WI.

POND EQUIPMENT AND SERVICES

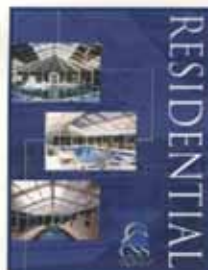
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ADVANCED AQUACULTURE SYSTEMS, INC. specializes in the design of pond and waterfeature systems. Since 1984, the company has developed many proprietary products and designs, including maintenance-free Aquacubes and Perma-Bead media as well as hundreds of other dependable components. The company also offers design and technical-support services for all projects. **Advanced Aquaculture Systems, Brandon, FL.**

POOL ENCLOSURES

Circle 128 on Reader Service Card



CAROLINA SOLAR STRUCTURES offers custom pool enclosures and pavilions. Made with coated tubular-aluminum frameworks, the structures feature internal connections that are non-corroding and stand up to the moisture and chemicals associated with indoor pools. Motorized, opening roofs are available, and the glazing provides passive solar heating and bright light transmission. **Carolina Solar Structures, Arden, NC.**

VENETIAN GLASS TILE

Circle 129 on Reader Service Card



KOLORINES manufactures Venetian glass tile that is durable, beautiful and resistant to weather and chemicals. The tiles come on paper mounting sheets and can be set up as solid colors, color gradations or random color blends. The available palette ranges from subtle earth tones such as honey, amber or wheat to bright, vivid hues including vermillion, turquoise or dark cobalt. **Kolorines, Cuernavaca, Mexico.**

AQUASCOPE® patented Tele-scoping Fountains transform pools and spas into beautiful fountains during non-swimming hours. These easily installed fountains automatically retract flush into the pool bottom and do not protrude when not in use. The fountains are powered by the standard pool filter pump. **NO ADDITIONAL PUMPS ARE NECESSARY.** A one inch line fitted with a gate valve is all that is needed in addition to the fountain.

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OF INTEREST

BUILT-IN POOL-CLEANING SYSTEM

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A & A MFG. offers QuikCleanMax, a built-in pool-cleaning and circulation system that takes care of cleaning the pool floor as well as benches, swimouts, loveseats, spas and other hard-to-clean areas. System enhancements include venture-powered skimming for superior surface cleaning and an in-line canister that captures leaves, sand, insects and other heavy debris before they reach the pump. **A & A Mfg.**, Phoenix, AZ.

CANTILEVER FORMS

Circle 131 on Reader Service Card



STEGMEIER CORP. makes a wide range of forms for use in setting up cantilevered edges for pools. Designed for poured-in-place applications, the forms allow for installation of profiles including rounded bullnose looks, squared shapes with rounded-over corners, shapes set up as hand holds and step ledgers. There are also forms designed for use with stamped concrete finishes. **Stegmeier Corp.**, Arlington, TX.

POND LINERS

Circle 132 on Reader Service Card



FIRESTONE BUILDING PRODUCTS makes PondGard liners for decorative ponds and waterfeatures. The EPDM product is flexible, stable, long-lasting, easy to work with and safe for use with fish and aquatic plants. Available in a variety of lengths and widths, the liners can be quickly and securely sealed to make larger liners or meet the requirements of special features such as waterfalls. **Firestone Building Products**, Carmel, IN.

SPECIAL PIPING

Circle 133 on Reader Service Card



DURA PLASTIC PRODUCTS offers a catalog on its special piping components. The 16-page brochure highlights manifold systems; 3/4-inch hose fittings; compression couplings, tees and adapters; flexible PVC fittings; a range of clear schedule 40 fittings; and items including anti-theft couplings, micro-sprayer adapters and more—all of which come with three-year limited warranties. **Dura Plastic Products**, Beaumont, CA.

RUBBER-TRACKED LOADERS

Circle 134 on Reader Service Card



CATERPILLAR has announced Models 267 and 277 multi-terrain loaders. The compact, rubber-tracked machines are designed to be productive in soft, wet soils and on sloped terrain. With high traction and low ground pressure, they're also suited to work on sensitive surfaces (such as turf) without causing significant damage. The units also feature quick couplers for easy tool changes. **Caterpillar**, Peoria, IL.

RESTYLED POOL CLEANERS

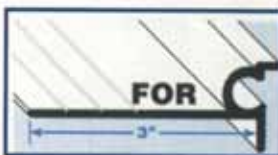
Circle 135 on Reader Service Card

AQUA VAC SYSTEMS has revamped its line of rim-to-rim automatic pool cleaners under the Shark Zone banner with new names and new looks. The company's residential products – MakoShark, MakoShark 2 and TigerShark – join its commercial products – KingShark, KingShark 2, KingShark 2 Plus and TigerShark 2 and two HammerHead models for service professionals. **Aqua Vac Systems**, West Palm Beach, FL.



FIBEROPTIC TRACK

Circle 136 on Reader Service Card

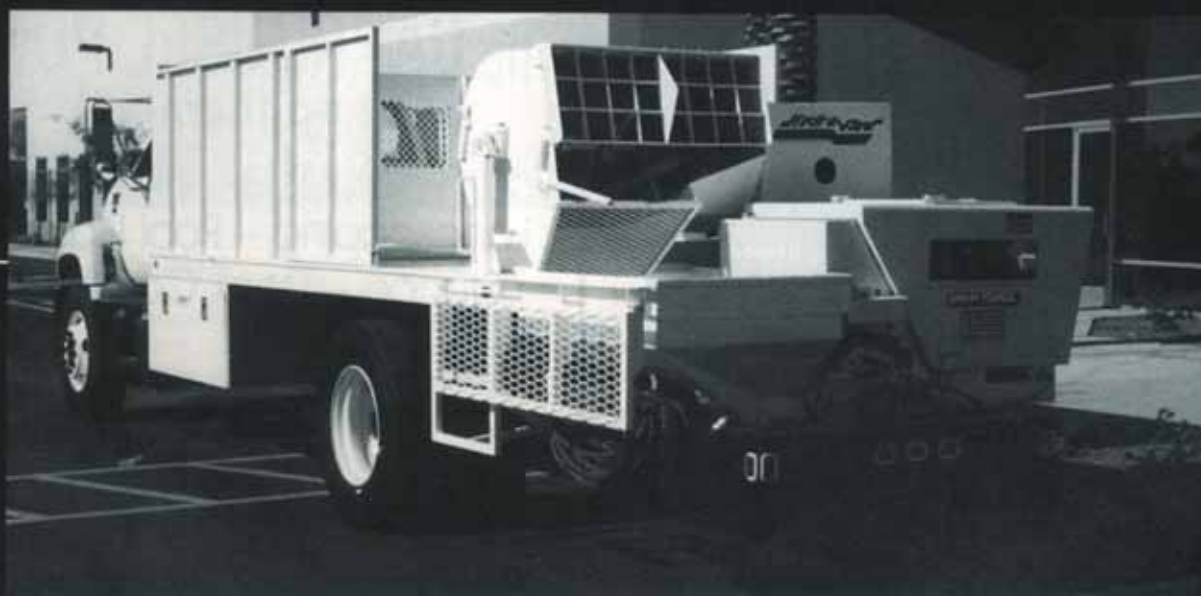


MODERN POOL SYSTEMS makes receiver track for fiberoptic lighting installed on gunite pools. Designed for use with Super Vision SV42, Fiberstars FS-CABL-49, Polaris AD79 and other compatible fiberoptic cables, the units come in 8-foot straight, 8-foot notched and 6-inch radius sections. Exit pieces and step kits are also available, and the products come in white or black. **Modern Pool Systems**, Columbus, MS.

AUTOMATIC POOL CLEANER

Circle 137 on Reader Service Card

POLARIS POOL SYSTEMS offers the Vac-Sweep 360 automatic pool cleaner. Designed to clean typical in-ground vessels in less than three hours without the need for a booster pump, the unit vacuums, sweeps and scrubs the bottom and walls of pools of any size or shape. It also features a large bottom opening to pick up large debris and a back-up valve that keeps the cleaner from getting stuck. **Polaris Pool Systems**, Vista, CA.



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COMMERCIAL POOL PRODUCTS

Circle 138 on Reader Service Card



PARAGON AQUATICS has published a condensed catalog about its lines of commercial pool equipment. The eight-page, full-color brochure covers starting platforms and their anchoring systems, diving towers, diving boards, grab rails, built-in steps, lifeguard chairs, vertical ladders, underwater windows and more – including the company's filters and custom rail-fabrication capabilities. **Paragon Aquatics**, LaGrangeville, NY.

COMMERCIAL EQUIPMENT CATALOG

Circle 140 on Reader Service Card



ASTRAL PRODUCTS has published a buyer's guide to its line of products for commercial pools. The 44-page booklet covers filters and accessories, pumps, gratings, valves, ladders and handrails as well as stainless steel accessories, deck equipment and maintenance necessities. Technical data and basic specifications are provided for each item, along with information on warranties. **Astral Products**, Jacksonville, FL.

UNDERWATER LIGHTING

Circle 139 on Reader Service Card

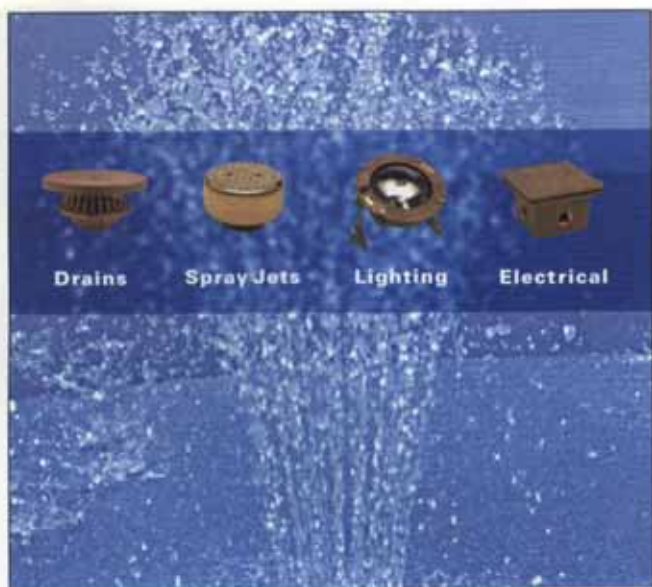
VISTA PROFESSIONAL OUTDOOR LIGHTING makes Model 5127, an injection-molded, glass-reinforced luminaire for use underwater. The 12-volt unit's housing offers strength and high UV stability in bronze and black finishes. The lens is a flat, tempered, shock- and heat-resistant clear glass gasketed for a watertight seal. Optional colored lenses are also available. **Vista Professional Outdoor Lighting**, Simi Valley, CA.



FLOOR-MOUNTED FANS

Circle 141 on Reader Service Card

HUNTER FAN CO. has introduced two outdoor, floor-mounted ceiling fans to maximize outdoor air circulation and provide optional patio lighting. The Cascade (permanently mounted) and Nomad (portable) models both offer galvanized tubular steel construction and corrosion-preventing coatings in black, white or bronze along with weather-resisting features to protect fan components. **Hunter Fan Co.**, Memphis, TN.



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COATINGS-APPLICATION EQUIPMENT

Circle 142 on Reader Service Card



PERMA-TECH has introduced the Blue Machine line of coatings-application equipment. The high-pressure, high-volume, plural-component spray systems are designed for application of specialty coatings over any substrate, including concrete, wood and steel in aquatic settings. The line includes four models with product-delivery capabilities ranging from 18 to 45 pounds/minute. **Perma-Tech**, Cleveland, OH.

MULTI-POOL CONTROL SYSTEM

Circle 144 on Reader Service Card



ACU-TROL PROGRAMMABLE CONTROLLERS offers a Mini-Program-System (MPS) on its AK200 pool and spa controller. The controller uses 44 different programs to determine which relays, alarms and pagers should be on or off and allows for remote computer control of up to three pools for chemicals, motors, lights,

heaters, backwashing, water leveling and more. **Acu-Trol Programmable Controllers**, Auburn, CA.

POOLSIDE BASKETBALL

Circle 143 on Reader Service Card

S.R. SMITH has introduced its new Swim 'n' Dunk basketball game. Designed for use in the shallow end of inground pools, the structure features two 1.9-inch-diameter stainless steel uprights with a competition-quality acrylic backboard and regulation rim. Great for one-on-one as well as team use, the system meets the growing demand for pool games integrated into the pool itself. **S.R. Smith**, Canby, OR.



WATER SLIDES

Circle 145 on Reader Service Card

SPECTRUM AQUATICS manufactures the Hercules water slide, a system with wrap-around tubes and water-spray lubrication. The unit comes with a three-year structural warranty and rises 6 feet above deck level with one, two or three flumes. All stairs and the top landing's surface are slip-resistant. The 27-inch-diameter tubes are polyethylene and come in three colors: red, yellow or blue. **Spectrum Aquatics**, Missoula, MT.



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ANTI-VORTEX SURFACE ADAPTER

Circle 146 on Reader Service Card



WATERWAY PLASTICS has introduced an Anti-Vortex Finish Lip Ring. This new component holds finishing materials in place on the company's standard drain lids. Available in six colors, the ring enables the contractor to match the drain's appearance to that of the pool's interior finish for a more polished, professional

look. **Waterway Plastics**, Oxnard, CA.

COMMERCIAL PUMPS

Circle 147 on Reader Service Card



PENTAIR POOL PRODUCTS has published literature on its C-Series of high-performance commercial pumps. The pumps come in five models from 5 to 20 horsepower with single- or three-phase motors. The four-page brochure includes performance and efficiency curves as well as schematics, specifications and information on standard features and materials of construction. **Pentair Pool Products**, Sanford, NC.

DECORATIVE PATH LIGHTS

Circle 148 on Reader Service Card



HADCO has introduced SPL4, SPL5 and SPL6—decorative, low-voltage path lights made of solid brass (with the exception of the stainless steel shade on the SPL4-N or the copper shade on the SPL5-N). The fixtures are provided in natural brass or are chemically dipped to achieve the patina of an oiled-bronze finish. No tools are required for re-lamping, and all fixtures come with a 20W T3 halogen lamp. **Hadco**, Littlestown, PA.

CLASSIC STONE FOUNTAIN

Circle 149 on Reader Service Card



HADDONSTONE (USA) LTD. manufactures the Eton College Fountain (Model C3600), a three-tier structure the company first made to replace the badly deteriorated original. Three ornate pedestals support decorative shell bowls, with the top bowl surmounted by a naturalistic bud-shaped spout. The lowest shell is 37 inches wide; the overall height is more than six feet. **Haddonstone (USA) Ltd.**, Bellmawr, NJ.

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OF INTEREST

PRESSURE-TEST PLUGS

Circle 150 on Reader Service Card



PARAMOUNT POOL & SPA SYSTEMS offers pressure-test plugs for use with its in-floor pool-cleaning systems. The new plugs install easily into the cleaner heads on the pool floor and can be pressurized up to 50 psi. Developed to allow for blowing

out construction debris one line at a time, they can also be used to keep debris out during refinishing and for winterizing plumbing lines. **Paramount Pool & Spa Systems**, Tempe, AZ.

MODULAR CARTRIDGE FILTER

Circle 152 on Reader Service Card



WET INSTITUTE offers Modufilter, a high-performance, modular cartridge-filtration system for pool and spa applications. Available in sizes from 180 to 400 square feet, the systems include cartridges with extra wide and deep pleats to ensure low maintenance and long filter cycles as well as a balanced-flow design to maximize filtration efficiency. The stainless steel tanks come in tan or gray. **WET Institute**, Piru, CA.

POOL WALLS FOR FOUNTAINS

Circle 151 on Reader Service Card

DURA ART STONE makes pool walls for use with a range of fountains. Typical pool configurations include Roman-style and quatrefoil forms as well as circles and squares. Pool configurations and drawings (complete with field dimensions) are required. The walls are available with three standard profiles or can be custom-made. Several special pool copings are also available. **Dura Art Stone**, Fontana, CA.



POOL AND SPA TILE

Circle 153 on Reader Service Card

UNIVERSAL POOL & SPA TILE offers a catalog on its full line of tiles for pools and spas. The 20-page, full-color brochure highlights various lines that offer the appearance of slate or stone in many patterns and textures as well as tiles printed with such forms as camellias, angel fish, shells and more set in subtle relief on the surface. Glass tiles and mosaics are also available. **Universal Pool & Spa Tile**, Northridge, CA.



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AUTOMATIC POOL CLEANERS

Circle 154 on Reader Service Card



ZODIAC POOL CARE offers Mars HP, an automatic, pressure-side pool cleaner. Designed to clean a 15-by-30-foot pool in less than three hours with no hang-ups, the unit collects large debris (such as oak leaves and acorns) as well as fine debris (such as sand) in its large-volume, easy-to-clean trap. The device includes few

moving parts and comes with a two-year warranty. **Zodiac Pool Care**, Pompano Beach, FL.

PLASTER-PUMPING RIG

Circle 156 on Reader Service Card



MAYCO CONCRETE PUMPS has introduced the MG-30, a rugged, reliable, highly efficient system for application of plaster and pebble finishes. Powered by a 35-horsepower diesel engine, the unit is available in a pump-only model or as a combination pump/mixer – with both mounted

on the same trailer. Both models are designed for high volumes, low maintenance and long service lives. **Mayco Concrete Pumps**, Carson, CA.

ALL-NATURAL FILTRATION MEDIUM

Circle 155 on Reader Service Card

NORTHERN FILTER MEDIA INT'L manufacturers Zeobest, a 100%-natural filtration medium. The product meets NSF Standard 50 and features a large surface area that filters particles down to 3 microns. In addition, the material has a high ammonia-holding capacity that reduces eye burning and odors – which leads to lower chemical use, fewer backwashes and lower costs. **Northern Filter Media Int'l**, Muscatine, IA.



COVERS FOR VANISHING-EDGE POOLS

Circle 157 on Reader Service Card

COVERSTAR offers automatic pool covers intended for use with vanishing-edge designs. Each project will offer numerous mounting options, so early consultation with the supplier is important.



In general, these applications use underguides on one side of the pool and topguides or flush deck guides on the sloped side; water passes under the suspended cover guide on its way to the collection trough. **Coverstar**, Provo, UT.

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CEMENT TOPPING

Circle 158 on Reader Service Card



L.M. SCOFIELD CO. makes Texturetop, a cementitious topping with improved workability and higher strength in a wide range of attractive integral colors. Designed for surfacing and texturing interior or exterior concrete, the fast-setting product comes in stamp-grade and stencil-grade formulations and offers abrasion-resistant surfaces with excellent moisture and freeze/thaw resistance. **L.M. Scofield Co.**, Los Angeles, CA.

FOAM JOINT FILLER

Circle 160 on Reader Service Card



W.R. MEADOWS offers SealTight Deck-O-Foam, a flexible, lightweight, non-staining polyethylene expansion-joint filler. Resistant to chemicals, UV stable and non-absorbent, this economical, compressible foam features an extended service life for both interior and exterior applications. The product comes with a removable strip that provides for a uniform sealing reservoir in the joint. **W.R. Meadows**, Hampshire, IL.

NEW FOUNTAIN CATALOG

Circle 159 on Reader Service Card

AQUAMASTER FOUNTAINS & AERATORS has published "Master the Power & Beauty of Water," an all-new catalog on its line of fountains and aerators. Coverage includes the company's five product groups: floating fountain aerators, floating surface aerators, air injectors and the Oxymax and Ultimax aeration systems. Sizes range from 1/2 to 25 hp and all are UL Listed. **Aquamaster Fountains & Aerators**, Kiel, WI.



DIRECTIONAL BORING SYSTEM

Circle 161 on Reader Service Card

CHARLES MACHINE WORKS manufactures the Ditch Witch JT520 Jet Trac, a directional boring system designed for burying wire and conduit in shallow runs up to 150 feet long. The easy-to-operate unit's compact size allows for maneuvering in tight spaces, while its rubber tracks and single-auger anchoring system have low impact on lawns and no adverse effects on sidewalks or asphalt. **Charles Machine Works**, Perry, OK.



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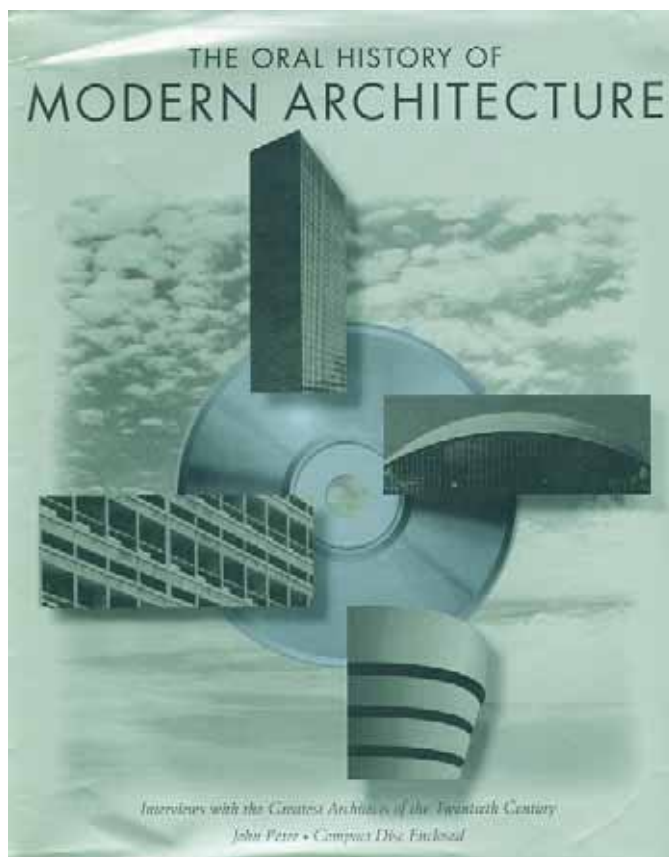


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Modern Voices

If you feel the same need I do to explore the vast and inspiring reaches of 20th-century structural forms, *The Oral History of Modern Architecture* by John Peter is a wonderful and enduring resource.

Published in 1994 by Harry N. Abrams (New York), this text features more than 100 interviews with modern architects, including in-depth discussions conducted by the author with a group he defines as the “Top Ten” masters of modern architecture.

The interviews were conducted in the stretch from 1953 to 1989, and several audio excerpts are provided on a CD that comes as a companion to the printed transcripts. And it’s quite a roster of luminaries, including Frank Lloyd Wright, Le Corbusier, Phillip Johnson, I. M. Pei, Walter Gropius, Ludwig Mies van der Rohe, Eero Saarinen, Louis Cahn, Oscar Niemeyer and Jose Luis Cert.

Although all of these masters can be firmly placed under the umbrella of “modern architecture,” the diversity of styles, philosophies and creative influences they represent is vast and tremendously rich. Peter pulls it all together by exploring a common set of ideas in each interview, delving specifically into what each of his subjects thinks about the roles of technology, society and art in their creative processes.

In addressing these common themes, Peter develops a basis for comparing these titans of design – which makes for compelling and often

challenging reading. In other words, if what you seek is sets of rules and authoritative pronouncements on modernism, you’ll almost certainly be frustrated by the wild and sometimes conflicting ideas and approaches espoused by Peter’s Top Ten – not to mention the dozens of other figures you’ll meet in the book’s 390 pages.

The interviews offer rare insights into the nature of the artist’s life: So many of these architects saw themselves and their work as clear departures from the personalities and traditions of the past, and it’s fascinating to “eavesdrop” as they describe their uphill battles for acceptance and their struggles to win important commissions.

As Peter points out, their architecture is really only 80 years old, the successor to centuries of habit and practice expressed in classical or traditional forms. It’s plain that in many instances these architects assumed huge risks – and the one thing I missed was some discussion of setbacks and failures they endured on their paths to greatness.

On a different level, I was surprised and inspired to learn that, among the Top Ten listed above, three of these great architects had no formal training or education and arrived in the profession by way of construction work and other practical pathways. I found myself wondering if their careers would have been at all the same had they received that formal training.

Rather than making it easy on you by revealing the names of the three upstarts, I’ll leave it to you to exercise your own curiosity and find their identities through this book or some other resource. I’ll also leave you with the thought that modernism is such a rogue art form that it might be fair to assume that rejection of the past – or even ignorance of the rules and boundaries it teaches – is a big part of what made these reamarkable upwellings of creativity possible.

Throughout, Peter also examines seminal works of modernism from around the world and strongly urges architects and designers to travel to as many of these sites as they can. Although most of my own “traveling” in this respect has come by way of books, he makes the case so persuasively that I am motivated in all new ways to see and appreciate these influential structures with my own eyes. **MS**

Mike Farley is a landscape architect with 20 years of experience and is currently a design/project manager for Leisure Living Pools of Frisco, Texas. He holds a degree in landscape architecture from Texas Tech University and has worked as a watershaper in both California and Texas.

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