Inside: Stephanie Rose on Contrast

WaterShapes

Design • Engineering • Construction

Volume 8
Number 5
May 2006
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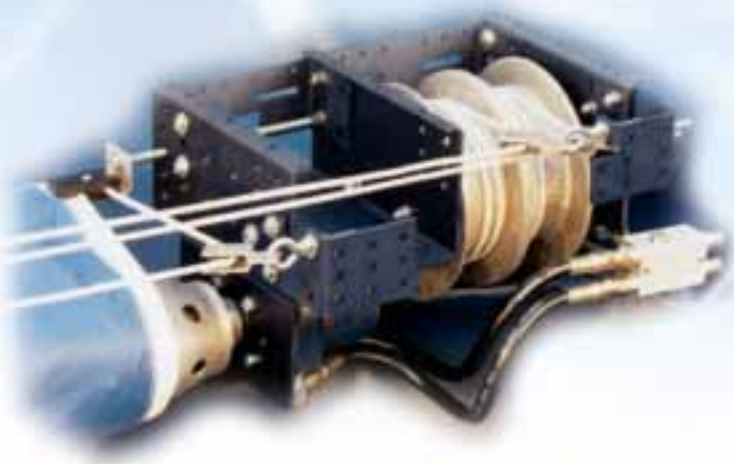

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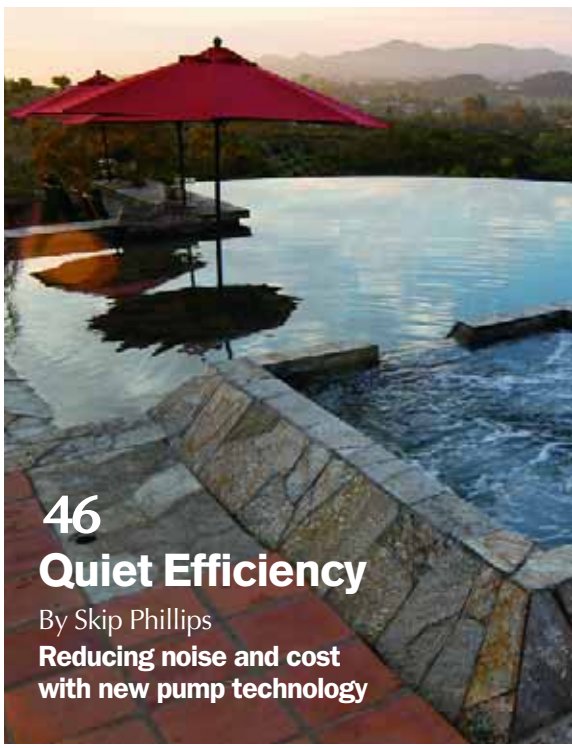

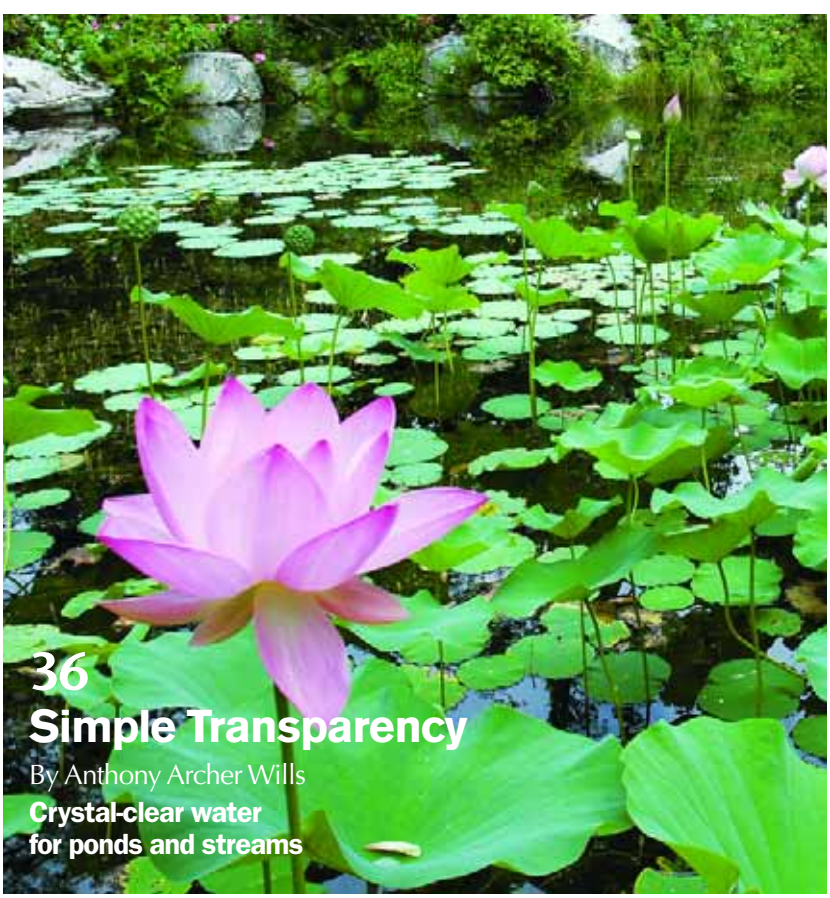

WATERSHAPES
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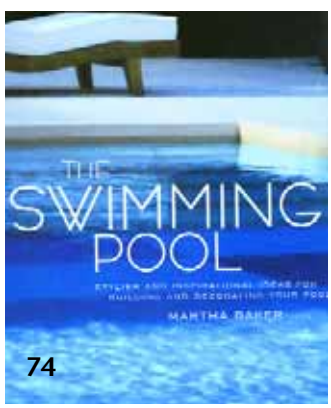
columns



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On the cover:
Photo courtesy Anthony Archer Wills, Copake Falls, N.Y.

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By Eric Herman

Brave New Worlds

If you're like me, news stories in magazines and on television that cover innovations in science and technology are far more interesting than about 95 percent of the stuff featured in the mainstream media these days. To me, few things are more intriguing than peeking in on the creative process and witnessing the spirit that leads to true innovation.

I'd go so far as to say that I think the scientists, engineers, inventors and even artists who, through their pioneering urges, give us new products, tools and ideas, are in many ways the real heroes of our time.

One of the challenging things about spotting these innovations is that they don't come along all that often. To be sure, researchers, manufacturers and artists improve their offerings all the time – incremental progress that is itself often exciting and creative – but part of the reason that true advancements are so special is that they are actually quite rare, even in today's world of thrilling expansions in tools, technology, materials and creative insight.

Among the great joys we have publishing *WaterShapes* is the opportunity to shine a light on the people and products that are in one way or another pushing the state of the art. Determining what is and isn't "newsworthy" in that respect is largely subjective as we seek out designers and innovators whose work is, we think, making a difference. But we trust our instincts (and the feedback we get from a wide-ranging group of advisers), and in the last little while, we think we ran into something big.

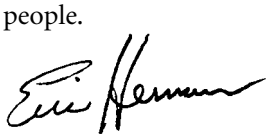
Just last February, our old friend, Skip Phillips gave me an enthusiastic earful about the virtues of a new type of pump he was using, specifically one using "variable frequency drive" technology. Skip is generally an enthusiastic guy and he's especially passionate about hydraulics, but rarely have I ever seen him so animated about a subject. The result of that discussion can be found on page 46 in his article, "Quiet Efficiency."

I'll leave it to Skip to make the case for whether or not this new breed of pumps is a huge leap forward, but there's no question that what he's reporting is, at the very least, powerful food for thought.

In the same innovative spirit, you'll find "Shining Through" by Nate Reynolds on page 54. Nate works at Reynolds Polymer Technology, a firm that produces large-scale acrylic structures. To be sure, transparent structures of this sort have been around for a couple of decades, but I'll go out on a limb and say that few companies have done as effective a job of pushing the technological envelope and drawing the most from a product's potential. Indeed, some of their projects must be seen to be believed.

▼▼▼

Due credit: On the cover of our February 2006 issue, we ran a photo of a beautiful brass basket/fire feature from the article "Pride of the Yavapai" by Bill Gullekson and Chris Doyle. We omitted a credit to stone and metal sculptor Gordon Paul Mischke of Cave Creek, Ariz., who created this unique homage to weaving patterns found in the crafts of the Yavapai people.



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May's Writers

Michael Nantz is principal and founder of Elite Concepts by Michael Nantz, a design/build firm with offices in Dallas and Austin, Texas, that focuses on custom, high-end commercial and residential swimming pools, spas and waterfeatures. He joined the pool industry in 1988 after working as a project manager in high-rise commercial construction. He has studied construction management and architectural design and offers design and consulting services to architects and engineers for elaborate watershape installations in the United States and abroad. He participated in the National Spa & Pool Institute in various capacities through the years, including a six-year term with the Builders Council (with a year as chairman) and service as a judge for design-awards competitions. He also has served as an instructor and won many NSPI design awards in addition to being a Platinum member of the Genesis 3 Design Group.

Anthony Archer Wills is a landscape artist, master watergardener and author based in Copake Falls, N.Y. Growing up close to a lake on his parents' farm in southern England, he was raised with a deep appreciation for water and nature – a respect he developed further at Summerfield's School, a campus abundant in springs, streams and ponds. He began his own aquatic nursery and pond-construction business in the early 1960s, work that resulted in the development of new approaches to the construction of ponds and streams using concrete and flexible liners. The Agricultural Training Board and British Association of Landscape Industries subsequently invited him to train landscape companies in techniques that are now included in textbooks and used throughout the world. Archer Wills tackles projects around the world and has taught regularly at Chelsea Physic Garden, Inchbald School of Design, Plumpton College and Kew Gardens.

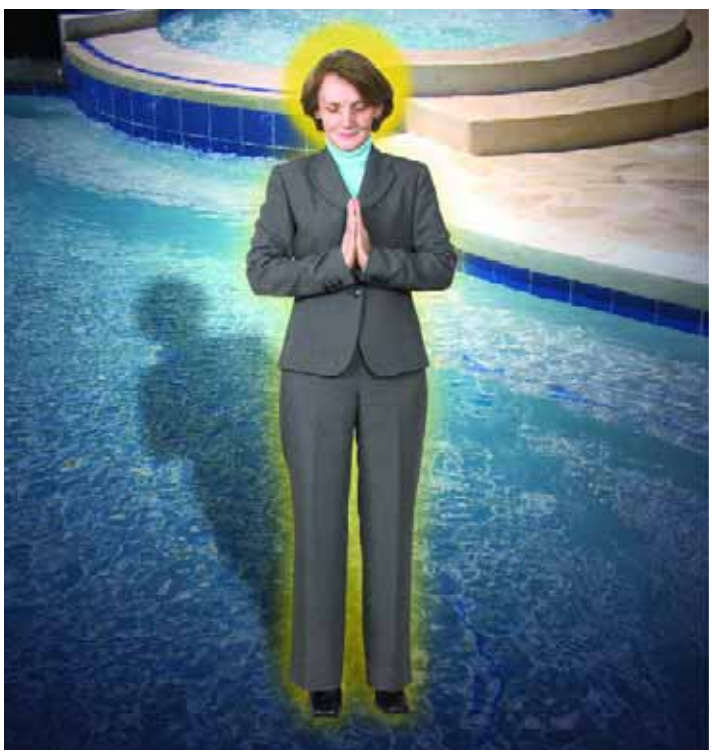
He has also lectured at the New York Botanical Garden and at the universities of Miami, Cambridge, York and Durham as well as for the Association of Professional Landscape Designers and the Philosophical Society. Later this year, he will lecture on watergarden design at the Aqua Show in Las Vegas.

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 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.

Nate Reynolds works in market development for Reynolds Polymer Technology, where he's served in a variety of roles during the past ten years. Based in Grand Junction, Colo., the company manufactures cast acrylic structures for numerous applications and industries. Reynolds graduated from Chapman University in Orange, Calif., in May 2004 with a double major in International Business and Finance and now seeks out new architectural applications for the family firm's large-scale acrylic castings. The firm was founded more than 20 years ago by Reynolds's father, Roger R. Reynolds, and enjoys a worldwide reputation as a top-flight manufacturer, installer and fabricator of thermoplastics used in public aquariums and zoos as well as in the medical, architectural and commercial-products industries.

By Brian Van Bower

The Perfect Client



Despite the axiom that "every client is a good client," we all know that some of them are wonderful to work with – and that dealing with others is a form of slow torture.

I've always loved hearing the horror stories about bad clients that float around the watershaping trades: The telling and retelling of these nightmares (often with exaggerations as the stories travel from ear to ear) is often a treat, and I know I've had my share of therapeutic fun at the expense of a knucklehead or two.

We don't generally hear quite so much about the good ones, but it's fair to say that most of us have lists of satisfied clients and that our experiences with them give us much of the motivation we have to stay in the business.

What it boils down to is this: Each and every client is different and presents us with an individual profile of likes, dislikes, needs, wants, hot buttons, communication styles and opinions about everything from politics to the social significance of fly-fishing. That's simply the nature of doing business with human beings, and sometimes things will work out very well, while other times things will go south in a hurry.

Either way, these observations lead to an obvious point: Clients are, for better or worse, the most important influence on our business, and although there are those who would disagree with me on this, I believe that knowing how to work effectively with them is every bit as important as knowing how to design, engineer and build quality watershapes.

Leaving client relations up to happenstance and the whims of human personalities is a big mistake: Deal with them in a deliberate (if not structured) way.

the balancing act

Watershaping as an activity is essentially a two-fold proposition. On one side of the equation, we must do everything we can to be as competent and expert at our work as possible. On the other, we must skillfully manage client relations.

As I've stated before, watershaping is all about bringing joy, relaxation, luxury and fun to people's lives. Thus, the experience someone has in obtaining a pool, spa or some other body of water is a critical component of long-term satisfaction with our output. This means that, without a doubt, we must be good at dealing with people.

Through years of talking with people in the industry, however, I've come to observe that a great many of us focus far more clearly and effectively on the work side of the equation and are much less resolved when it comes to the human relations side of the job. In fact, too many people I know think that dealing with clients is something that unfolds by chance.

I believe that leaving client relations up to happenstance and the whims of human personalities is a big mistake. The client is, after all, integral to the entire process, so it only makes sense to approach the process of dealing with them in a deliberate (if not structured) way.

The first step in that process is understanding what it takes to foster a good watershaper/client relationship and working consciously to bring out the positive personality attributes of those with whom we do business.

Continued on page 12

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Certainly, we cannot control the personalities of other people – nobody can. But watershaping is a give and take, and in so far as we can set the tone of the interaction, govern expectations and understand what makes our clients tick, we can influence every such situation in a positive way.

Sometimes that will mean making a difficult situation only tolerable, while in others it will mean taking a good situation and making it even better. While we can't ever determine or mandate the responses others will have, we always have choices in how we do things on our end of the process.

Yes, competency in our work takes a great many of us down the road toward good client relations – no doubt about it – but in my book it's the side where the human touch comes into play that seals that deal.

what's good?

When I think of the "perfect client," a number of big things come to mind, starting with sufficient budgets (and the will to spend), affable personalities, good settings for proposed watershapes, some idea of what they want and how they want to use it – and, of course, great wine cellars and a willingness to share a bottle or two.

Among all possible positive client characteristics, however, to me the most important is the simple desire to be involved, to get engaged in the process. Client feedback at all stages, whether you only do designs (as I do) or just do construction – or tackle *both* – is perhaps the most important information you can receive throughout the course of any project, bar none.

Look at it this way: If the client doesn't communicate, we have absolutely no way to direct our efforts toward a satisfying result. Without input, we are only guessing – a fact that, on its own, means that it is our professional responsibility to establish working relationships with clients that promote the exchange of ideas.

It also means that we have to be prepared to work with clients with smiles on our faces when in the course of the process they change their minds. And this is a huge point, because almost without exception, an involved client will be the one who will most likely change direction in one way or another at some point in the project, very often more than once.

This defines the client-relations issue as being a matter of seeing our work as an ongoing collaboration and structuring that work so that we can accommodate and are in fact comfortable with change.

Of course, I've always maintained that changes are a good thing in our business. They generally add to how much money we can make on a project, but far more important is the fact that they represent increased client involvement and help us zero in on what will almost certainly be a fully satisfactory end product.

On the flip side, I maintain that if you're someone who can't comfortably roll with change, you're probably in the wrong business.

great expectations

An enormous part of bringing out the best in our clients has to do with managing their expectations. A client who knows what to expect when it comes to timelines, the scope of the work, communications during the process, technical support after the fact and a range of other substantial issues is a client who is less likely to have problems along the way.

In fact, the most common irritant for clients is expecting something to happen that *doesn't*. Clarity of communications is the key here, and to a large extent it boils down to being up-front with clients as the process unfolds.

We all share a natural human tendency to make promises that we believe will make other people happy. When those promises aren't based in reality, however, and are offered only to gain favor during the sales process, then you're only setting yourself up for trouble down the line.

If, for example, your schedule is too extended to meet a client's desired timeline, there is absolutely no upside in over-promising something you know you almost certainly won't be able to deliver. Yet we see this happening everywhere with people in all walks of life making commitments they have no intention of backing up with performance.

The other side of expectations management is about understanding in realistic terms what you can or cannot provide. This principle of self-awareness reaches all the way from big things (such as whether or not you're really skilled enough to execute a perimeter-overflow design) to more mundane things (such as the speed with which you'll be able to obtain permits or arrange inspections).

It's also important to be aware that you set up an expectation for what you'll be like to work with by your own demeanor. If you're abrupt or given to confrontation, you can expect those characteristics to come forward with some clients and that they'll respond in kind. By contrast, if you respond to difficult situations with a good-natured, businesslike, non-preju-

dicial attitude, you're far more likely to see those tendencies in your clients.

In my case, I am also ready and willing to establish personal relationships that go well beyond the task at hand with my clients. I know that many of you are uncomfortable with that possibility, but through the years I've found that when clients and I engage in personal friendships through shared interests, it aids the process and creates a natural expectation that we will work together well.

Even when that turns out not to be the case (which does happen from time to time), the fact that we have some degree of personal rapport that goes beyond business enables us to work through most any rough spots that emerge.

learning to read

Whether you choose to like them or not, bringing out the best in clients requires skill in reading their personalities.

There is no question that skill in understanding others is intuitive and comes easily to some but not to others. Whether you're good at it or not, however, it's something we all must try to do: In many cases, it's only through understanding the client that we can ask the right questions and ultimately gain the information we need to make things work out for the best.

I have to admit to not being one who is gifted in this area, the reason being that reading people is primarily about listening. I'm known as someone who is good with people: I enjoy them and generally look for the good in most. But when it comes to effective listening, I've needed to work hard at it, doubtless because I'm such a ready talker that I sometimes don't listen as well as I should.

Fortunately, good listening is something that anyone can learn. First, we must be prepared to be quiet.

That's not easy for me by any means, but I've learned to restrain myself. In fact, I now recognize that although there's always a great deal I would like to say to clients about the spectrum of possibilities available to them in their watershapes, it's far more productive for me to keep my mouth closed, especially in early conversations with clients.

When I do speak up, I've learned techniques for drawing people out and asking questions that will garner meaningful responses. The hard part for me has always been listening to their responses, and I now make a conscious effort to do so. (I've found that taking notes is not only a good way to retain what my clients are saying, but it also prompts me to fall silent more often than I might otherwise.)

It's human nature to want to open up to those we perceive to be a good audience, but when I'm with clients, I make sure that I'm really there with them and focused on their needs. This is often tough, however, because there are so many distractions and multiple issues running through my mind about the project at hand and others on which I'm working.

I can and do fight through those patches and consciously remind myself that

when I'm with a client – in person or on the phone – I must focus all of my attention in his or her direction. People know intuitively when they're being listened to or when they're not, and it's a plain fact that nobody likes to be ignored.

And for crying out loud, when I'm with a client, I do everything I can to resist interrupting the proceedings to answer my blasted cell phone! If there's anything that says "I don't care about you right now" more than disrupting a conversation because you're a slave to your cell phone, I don't know what that might be.

warm to the touch

Like our clients, each of us has a different personal style. Some of us are far more comfortable in dealing with the human touch than are others, but whether you have an effusive personality or are more reserved, as watershapers we share an obligation to reach out to our clients in the spirit of building a rapport.

On a certain level, this requires revealing something of yourself. That doesn't necessarily mean divulging personal information or your life story, but it does mean having an open-hearted attitude about communicating and making a connection and being unafraid to reveal your own personality on some level.

In my case, I rely on humor to facilitate communication with clients. I'm generally seen as a funny guy, and I've found through the years that it's rare to find prospective clients who utterly lack funny bones. Watershaping can be such serious business sometimes, with so much by way of money and expectations on the line, that I see the importance of breaking the seriousness from time to time.

If you're not good at telling jokes and sharing witticisms, then at least be willing to enjoy the attempts of clients if they attempt to break the ice with humor. It may sound silly, but it's also human nature to like people who laugh at our jokes. I'm not saying that you should laugh at stuff that's not funny, but it's useful to try to avoid full-time seriousness and engage from time to time in lighter banter. Works for me, anyway.

I enjoy my working life more than most watershapers because I allow my interactions with clients to be enjoyable. The way I look at it, I'm fortunate to have the opportunity to work with interesting people and I would be doing them (and myself) a disservice by not being personable.

Bottom line: When it comes to finding and working with good clients, I believe that bringing out the best in others is all about presenting the best in ourselves. WS

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

By Stephanie Rose

By Contrast

As a designer I approach every landscape as if it were a blank canvas – which in essence it is. I know I need to manipulate color and shadow within that visual plane.

Practice makes perfect when it comes to developing the observational skills you need to support your design acumen.

As I discussed last month, honing these abilities enables a designer to see individual and collective shapes within a garden setting in ways that can enhance the overall appearance of plant/hardscape combinations and turn them into cohesive and more compelling visual compositions.

Among all of those artistic abilities is one specific skill that has served me best and will be my subject in this column: That is, the ability to determine the level of contrast my clients want to see in their garden spaces.

As an artist, I've always been inspired by the areas in paintings that display the greatest contrast. To my eye, these areas offer the greatest sense of depth and provoke the most interest in the composition, transforming two-dimensional canvases into three-dimensional works of art. That's just the sort of magic I want to bring to my designs.

finding inspiration

I am particularly intrigued by the art of botanical illustration and recommend it as a subject for close study if you're interested in developing an eye for contrast, depth and dimension.

To draw or paint any botanical specimen properly, the artist first needs to pore over the various parts of the specimen, noting the shapes, colors, relative sizes, appearances during growth and at maturity – and many other qualities that go into creating an accurate rendering.

Revisiting last month's column for a moment, if you observe a quality painting of a plant, you'll notice that the work appears to take on depth (instead of appearing flat) in places where a color goes from its darkest dark to its lightest light. The darker areas recede from you, while the lighter areas come forward.

It's the same thing as looking at a line drawing, which will always appear flat even though some lines are drawn to denote dimension. That same drawing takes on depth, life and interest only when shading is added.

To that end, as a designer I approach every landscape as if it were a blank canvas – which in essence it is. I know I need to manipulate color and shadow within that visual plane in a way that gives it depth and dimension that will interest observers and signify the success of my design. Using plants and hardscape as my medium instead of brush and paint, I transform an empty garden and bring it to life in the same way a painter enlivens a piece of canvas.

To illustrate these points, let's imagine a sequence of simple drawings – in this case a simple circle on a piece of paper. Add shading to that same circle and you have a sphere that, while it appears three-dimensional, has no anchor in space. Let's take it a step further and add shading to the surfaces *surrounding* the

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sphere: Now you have an object that has dimension as well as a position relative to other objects in space and will either be resting on the surface or floating above it, depending upon where you've put the shadow.

When viewing this completed drawing, the area that stands out the most is where the darkest darks are against the lightest lights – in other words, the area of greatest contrast. To me, the stronger this contrast, the more interesting it is, although that's largely a matter of personal taste and your own aesthetic sensibilities.

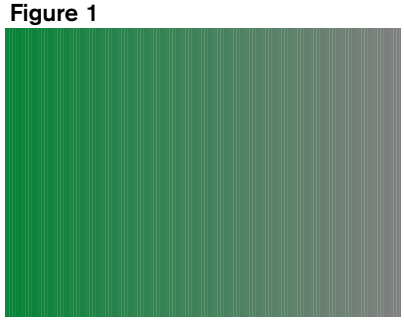
color basics

So let's look at different degrees of contrast and determine what they actually mean. Before we get there, however, let me clarify: When I talk about *contrast*, I'm referring to the differences we perceive between objects based on colors, the intensity of those colors and the relative values of those colors.

- By *intensity*, I mean how strong the color is, ranging from a pure color to one that is muted to a grayish tone. As an example, Figure 1 shows a graduated range of "green" going from a strong, pure green to a neutral green that has been mixed with its complementary color – that is, red. (Without getting too deep into color mixing, suffice it to say that when you mix colors opposite one another on the color wheel, you neutralize them and create a grayed version of the pure color.)
- By *relative value*, I mean how strong the color is. To illustrate, Figure 2 shows a gradation of the same green, going from a strong, pure green on the left to a very pale green on the right. (Colors can also vary in shade from, say, a blue-green to a yellow-green with everything in between, but let's not get too complicated here.)

As you look at these two figures, imagine that they are plants: If you put the palest green next to the darkest green,

Figure 1



Graduated greens, from strong to neutral.

Figure 2

Graduated greens, from pure to pale.

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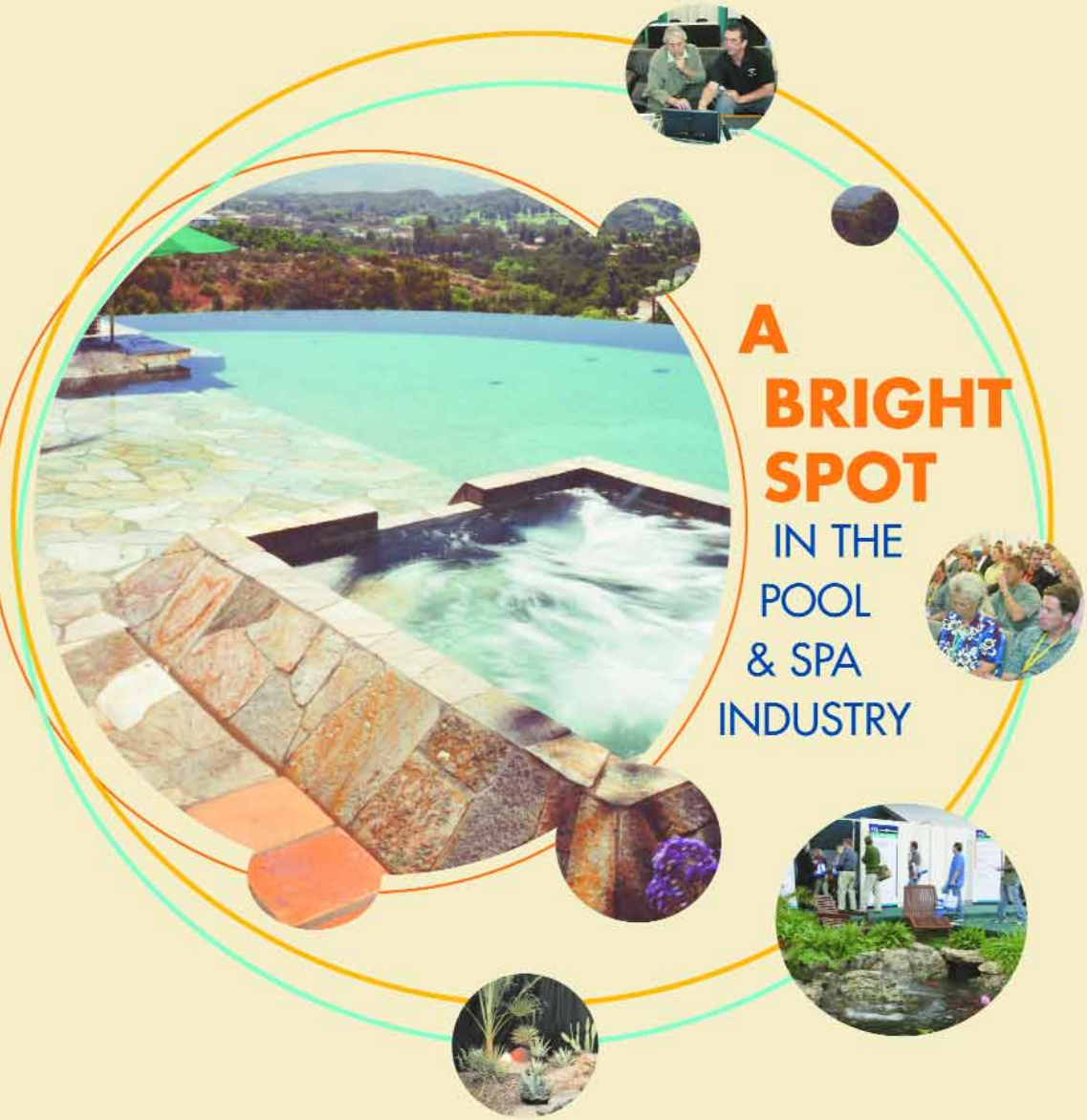

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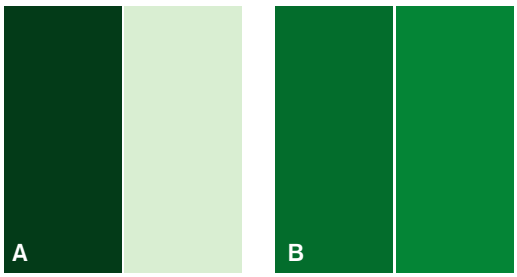
Figure 3

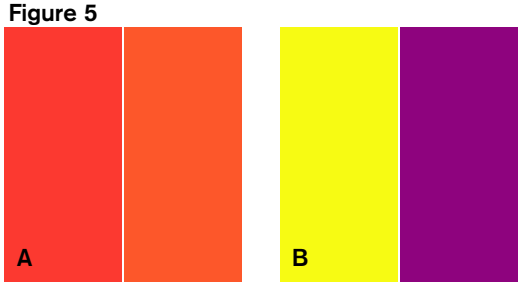


Degrees of contrast, from intense (A) to subtle (B).

Figure 4

Basic Color Wheel

Figure 5



Analogous (A) and complementary (B) colors.

you'll see the greatest contrast (Figure 3A). Conversely, by placing two similar greens next to each other, you invoke less contrast (Figure 3B). What becomes evident when you compare 3A and 3B side by side is that greater contrast translates to greater depth of the visual plane.

A common color wheel (Figure 4) offers another easy way to determine what colors will create greater and lesser contrasts, even if the wheel is limited to a display of only the primary (red, blue and yellow) and secondary colors (orange, green and purple).

The colors that are opposite each other on the wheel are known as *complementary colors*. Thus, red is the complement of green, blue is the complement of orange and yellow is the complement of purple. Colors that are next to each other on the wheel are referred to as *analogous colors*, with, for example, red being analogous to orange and blue to green.

Using analogous colors next to each

other in a design creates subtle contrast, while placing complementary colors next to each other intensifies the degree of contrast – a concept illustrated in Figure 5, where red and orange are analogous and yellow and purple are complementary.

If you stand across the room from these diagrams, you'll see how the analogous colors in 5A tend to blend together (because there's less contrast between them), while the complementary colors have greater contrast and offer a greater sense of depth. In 5B, the yellow advances toward the viewer, while the purple moves away from the viewer.

real-world applications

If you've ever wondered why most designers don't do "yellow" gardens, it's because the yellow is so intense that it moves toward you visually to a point where it dominates designs. ("White" gardens can do the same, but I've never been a huge fan of monochromatic palettes anyway.)

Translating all of this to gardens, a plant design that incorporates more intense contrasts is one that appears to have greater depth and dimension. Where a plant program consisting of mostly light greens might seem quite flat, by spotting in a few darker-green plants you instantly add depth to the design and create a more interesting view.

Within any garden setting, the more you vary the colors, the intensity of those colors and the range of their values, the greater the overall contrast and the greater the sense of depth and dimension. Not everyone likes a lot of contrast – something that must be settled with your individual clients – but there's plenty of room for maneuvering on the spectrum of contrasts available to you if you begin to think (and design) in these terms.

Some clients may like subtlety, while others may crave intense variations. Bright, bold colors in complementary tones (such as orange and purple) are tailor-made for the client who wants the interest, depth and dimension those strong variations create. On the other hand, pastels and muted tones in a narrow range typically catch the eye of a client who prefers a softer, less contrasting palette.

To be sure, there are just as many shades of clients as there are tones of any one color. It's your job as a designer to determine what degree of contrast appeals to your client and, armed with their preferences and your skills at constructing a planting plan, come up with a beautiful design that meets all their expectations. WS

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

By David Tisherman

An Elegant Inception

There's nothing quite like the exhilaration of stepping into a new situation with great potential, defining those possibilities and watching a client's eyes light up with the fire of inspiration.

Beginning a project can be wonderfully exciting, especially when you're working in a beautiful place with a terrific client who wants something truly elegant and special. In fact, I can honestly say that there's nothing quite like the exhilaration of stepping into a new situation with great potential, defining those possibilities and watching a client's eyes light up with the fire of inspiration.

Case in point: Not long ago, my partner Kevin Fleming and I were called out to a job site on Long Beach Island, N.J., by local landscaper Mark Reynolds, who'd heard of us and our reputation for using top-quality materials in top-flight designs.

When we pulled up, the first thing I noticed was the classic architecture of the home and a beautiful color scheme that turned on dark-olive shades of green. Situated on a large, flat lot right on the water, the structure had tremendous presence: grand yet inviting, elegant but warm. Everything inside was just as tasteful – rich, dark colors and great art throughout along with several eclectic touches. It all looked so good that I was somewhat surprised to learn that the client was planning major renovations inside and out.

Moving into the yard, I saw that the landscaping was gorgeous as well – but then we came to the hardscape and pool. What utter abominations! A whole series of paver-covered decks was poised at awkward, disjointed angles around the pool, and the pool itself was a nondescript freeform affair best described as "ugly" – radii that made no sense, blue waterline tile and boring white plaster and safety coping. It was everything about common pools that makes me ill.

The big question: How could anyone come into such a gracious setting and perpetrate such a visual crime? It could only have been someone with no design savvy whatsoever – a hack who was only in it for a buck.

game on

I'm not exaggerating: It really was a mess. Beyond some nice plants, the yard was saddled with the wrong colors and a whole set of injudiciously oriented shapes and lines – everything out of step with the exquisite character of the rest of the home.

Kevin just looked at me and smiled: We both saw how much this place was crying out for a beautiful watershape and a hardscape treatment that would extend out from and express the taste and personality of the client and her home. Suffice it to say that the project looked like big time fun.

Meeting the homeowner only served to reinforce that impression. She was extremely sophisticated and intensely concerned about design, and it was clear immediately that she wanted to be intimately involved in the process. As is often the case with such clients, our job ultimately would be to translate her ideas and tastes into our working design – a creative collaboration in the truest sense.

I've been telling Kevin for years that we don't

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sell anything, and that was particularly true in this case. The process isn't about hawking a particular program, but is instead about presenting ideas based on specific discussions of materials, joinery, layout, texture and line. In this case, the client said she wanted us to create something "wonderful," and it was clear from the start that she had a firm understanding of the sort of interactive process that would lead us to the best results.

That process was actually the opposite of the norm: Rather than start with a pool shape and location, we focused first on colors and materials that would attain our goals. Only then did we start working our way toward the pool itself.

Our first meeting lasted approximately 90 minutes and covered all aspects of the design, including her ideas about the look and feel of the space as well as her preferences with respect to style, color and materials. We spoke at length about how the pool was to be used (which in this case amounted to daily exercise and entertaining on weekends) – beyond which the watershape was to serve mainly as an aesthetic element within the landscape – not a focal point, but rather an element that would complement the setting through its materials and reflective qualities.

If there was anything unusual about the way things unfolded, it was that we didn't actually talk in specific terms about what the pool was going to be or how it would look through these early discussions. Instead, our initial sessions were all about materials rather than about laying out a watershape and then trying to fit in the parts. We didn't even *consider* the physical shape of the pool until we'd nailed down the color and materials – no drawings at all until later on.

color keys

Because the house and its color scheme were so distinctive, we knew that tying what we were doing outside into the home and its interior would be the best starting point. That in mind, we began by working with the client to select materials for the hardscape – a design element we saw as a bridge between the home and the exterior space.

I flew back to Los Angeles, collected stone samples and carted them back for my next visit with the client. After some careful consideration, she chose an extremely dense, hard stone known as Lompoc – just perfect for outdoor applications on the flats, with rich, oatmeal-colored surfaces marked by blue-colored veins.

I was delighted with her choice: The stone is quite subtle but is nonetheless beautiful and rich in appearance. It's also perfect for outdoor/poolside applications because it is dense and doesn't get too hot under a summer sun.

This first choice led us directly to discussing the internal surface of the pool. We still hadn't considered the shape of the pool or anything else about the design at this point, but we'd decided how the hardscape was going to look and ap-

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plied what we knew to this latest round of explorations.

To get things started, I went to my library of glass-tile samples and looked specifically at options from Sicis, Oceanside Glasstile and Boyce & Bean before settling on about a dozen colors from Sicis. (Although buying tile sheets for my library has set me back a fair penny, I'm aware of the fact that I have effectively distributed the cost over many projects.) I now began playing with mosaic combinations and developed multiple samples for the client.

Once they were ready, we dropped these samples in the existing pool to give her a sense of how they would look under water. I really love demonstrating surfacing options in this way: It gives the client an accurate sense of how the surface will interact with both water and light, and it's just plain fun to watch clients' eyes light up when they see how beautiful some of these options can be.

As a rule, I think a client needs to see about a square foot of material in order to come anywhere close to visualizing a tile surface. I sometimes see samples that are only a couple of square inches and can't say they're adequate by any means. It's even worse when clients are asked to select *stone* based on seeing a single piece: There's so much variation in these materials that it's impossible to get an accurate feel that way, which is why I always set up panels with at least two or three square feet of material.

With tile, the material generally presents much less by way of variation, so a square foot will do. In this case – and after additional lengthy discussions – the client settled on a mix of pinks, blues, lavender and white to be set off by an antique white grout.

inside out

With these issues decided, designing the pool was actually a simple process. I

It's a magnificent home in an amazing setting and deserved, I think, better treatment when it came to *everything* having to do with the pool and deck. The shapes and patterns were all wrong, the materials and colors were inappropriate – in other words, it was an ugly mess that needed complete reconsideration.

established scale and proportion based on the space and in this case came up with and placed a simple, pure rectangle that would allow us to place the visual focus on the beautiful materials while using the reflective qualities of the water to great effect.

The design also accommodated the fact that both swimming and entertaining were important. There weren't any children involved, so we concentrated on easy lap swimming and included steps that run the length of the pool for easy access and relaxation. We also established thermal ledges for lounging and a large spa for entertaining guests, with the ledge located adjacent to the spa to facilitate conversation.

Because the house and its setting are so spectacular, we wanted the pool to be rich in appearance but subtle in presence, accentuating the surroundings rather than making the pool the key to the space. As a result, we didn't raise the bond beam or go for a vanishing-edge effect, instead keeping the pool just about flush with the surrounding deck.

In general, I appreciate the water-on-water vanishing-edge or perimeter-overflow look, but at this point it's almost become old hat – and certainly didn't emerge as the right choice here, even with the prime waterfront exposure. We could have gone that way easily, but our choice here was to resist the temptation to compete with the Atlantic Ocean.

It's a point I've made in many of these columns: Watershape design is quite often best served with a large dose of restraint. In this case, *less* with respect to visual wrinkles really did feel like *more*. Certainly, we could've pushed a water-in-transit effect of some kind and that certainly would've driven up the price tag, but as I've said often enough, just because you *can* do something doesn't mean you *should*.

Instead, the edge treatment here is going to feature an elegant, double-sided bullnose coping that will be surmounted on the deck, giving the vessel a classic, old-world feel that harmonizes beautifully with the home and its surroundings. It's a simple detail that will accentuate the rectangular shape without making a huge statement – just the right note of subtle invitation.

As I said at the start, there's a particular thrill that goes with the onset of a project such as this that is so well situated and thoughtfully conceived. In fact, it's at times like these that I'm reminded there's nothing in the world I'd rather be doing. WS

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

Watershaper Michael Nantz has designed and installed projects across a wide range of styles, budgets and overall levels of complexity. Among the most challenging and ultimately satisfying of all those designs, he says, are those that unfold in the yards of clients who want to make significant personal statements – but in very small spaces. Here, we take a look at two such projects, both of which prompted him to summon up all of his creativity.

SPACE SAVERS

Working in constrained spaces is entirely different from tackling projects that unfold in pastures where the only boundary might be a distant mountain or an ocean view. Indeed, in small areas that may be defined by fencing or walls or adjacent structures, the constrained field of view offers substantial aesthetic challenges to the designer in that every detail, each focal point, all material and color selections and every visual transition will be seen, basically forever, at *very* close range.

When you're working small spaces, in other words, there's literally not much room for error.

In this smaller context, each and every decision watershapers and clients make will subsequently be in direct view, and it's likely that each detail will take on special significance for the clients, positive or negative, as they live with the watershape over time. And on many occasions, what we're asked to start with as designers leaves much to be desired, including spaces already vexed by sensations of confinement, closeness or downright claustrophobia.

To illustrate what I mean, let's take a look at two projects I recently completed in smallish yards for clients who wanted to use every square inch of space to the best possible effect. In both instances, we faced many challenges that are typical of small-space projects – and I have to say I'm proud of the solutions we developed along the way.

By Michael Nantz

The space available in this project was as tight as could be, with the house hemming it in on two sides and a low privacy wall taking care of the other two.

ISLAND FEVER

There's a tendency to view work in small areas as being regimented and deliberate – at least to the extent that your decisions must all work together. For all that, I find that working with clients and making choices about layout, balance, scale, proportion and the basic configuration of major design elements is, when it comes to small yards, still largely an intuitive process.

I don't believe, in other words, that there are set rules when it comes to small-yard projects (or any project for that matter), other than an overall sense that I want to make these spaces seem as spacious as possible as I work with sets of carefully integrated design elements. In these situations, my work with the client is aimed purely at developing a design that will provide a welcoming, pleasant experience for anyone who walks into and spends time in these yards.

The first project pictured here is on the island of St. Croix in the U.S. Virgin Islands – a job that demonstrates both the potential and the compromises of small-scale design. As you might imagine, it's a gorgeous setting in one of the world's most alluring tropical destinations.

The client owns 20 acres of oceanfront property with all sorts of places where a properly articulated watershape couldn't help being enhanced by the grandeur of the natural setting. In this case – and for reasons I still don't entirely understand – the client decided that he wanted to tuck the watershape in a 12-by-25 foot courtyard encompassed on two sides by the house and by a low privacy wall on the others.

Complicating matters was the fact that this scheme was a distinct departure from the project's original plan: When I first visited the site, the client wanted a large pool in a lush, wooded area near the water. I developed an entire plan, taking design cues from the ruins of the Dutch sugar plantations that once dotted the island. I rendered a large outdoor kitchen/entertaining area and a host of other details

Adding to the space problem was the need to accommodate a surge tank within the small pool's structure and to integrate the planter for a well-established palm – the kinds of head-scratchers that kept me on my best game throughout the project.

around the pool – even some authentic-looking (but faux) ruins consisting of arches and columns. The client loved what he saw, and I thought we were all set – but that simply wasn't the case.

Instead, the client completely changed directions and moved the project to the courtyard right next to the home. In fact, between my visits, he took it upon himself to dig the hole for the pool, following up that bold maneuver with a call asking what needed to happen next.

I was flattened by what he was saying. Even when he explained that he thought our first design was simply too complicated to execute given labor resources on the island and despite my assurances to the contrary, he simply didn't want to wait for it to be done – a process he somehow figured would take up to a year.

RETRENCHING

To be sure, I was looking forward to working on the grand-scale design and was taken aback by the sudden change, but I quickly regrouped and started working with the new and more constrained paradigm.

I soon returned to the site to figure out just what it was that I was now supposed to create. And what I saw blew my mind: Sure enough, he really had dug a hole for a pool, with no specific idea about design or details.

Unlike the spot we originally had set our sights, the courtyard was extremely confined and, I thought in my disappointment, extremely limited in potential. For starters, the barriers were fixed: The house wasn't going anywhere, and moving the privacy wall that wrapped around the courtyard on two sides was completely out of the question.

Adding to the challenge was the fact that the space was almost completely dominated by a large,

beautiful palm tree. Making a small hole in the ground and filling it with cement and water is easy, but being creative in transforming such a space into a visual pleasure is a whole different animal.

After some careful consideration (and a good bit of head scratching), I developed a two-stroke approach I believed would visually expand the space while retaining a sense of intimacy and up-close visual interest.

The first stroke had to do with breaking down the sense of confinement on two sides of the pool by installing a vanishing edge. I'm among those who think these days that the vanishing edge has become somewhat overused, but in this case I needed every opportunity I had to fool the eye. The result is an edge with a difference: The privacy wall stands only inches beyond the weir, and we celebrated this proximity through the use of contrast: The wall is white, while the pool's adjacent interior is black.

To my eyes, this approach enabled us to have it both ways: On the one hand, the edge draws the eye to the surrounding hardscape and landscape by virtue of its dark, reflective quality, thereby expanding the sense of space. On the other, the edge spilling into the white background conjures curiosity and a sense of mystery about the nature of the boundaries that define the space.

To me, the keys to making designs work in close quarters include selection of the right materials and development of a suitable color palette. In this case, we used contrasts between light and dark colors within and around the pool to move the eye – from one long angle to the vanishing edge and the mystery of the disappearing water and from the other to the planter and the graceful palm.

DEPTH AND DETAIL

Naturally, designing the project was one thing while building in the allotted space was another.

In excavating, for example, we found that the low privacy walls were supported by a spread footing against which we'd have to place the pool's shell. This forced us to construct the vanishing-edge gutter right on top of the footing with minimal expansion, which limited both the size of the gutter and its surge capacity. After a few volume calculations, we settled on a gutter size that was deemed acceptable.

I designed the gutter detail with slope and additional drain pickup points that emptied into a pipe paralleling the gutter – virtually doubling the gutter size – with everything flowing into a remote surge tank. For some reason, the concept of a separate tank really annoyed the client, so we needed to develop Plan B.

With a good amount of pondering, I decided to make the surge tank an integral part of the poured-in-place pool shell by tucking it under a thermal ledge that would replace the steps we'd originally been considering. This in turn led to a decision to draw attention to the ledge with a vivid, coral-colored glass tile.

Now access to the tank became a big issue. Rather than install and conceal a hatch in the planter above the tank (an idea the client rejected), we instead placed a submarine door on the inside of the pool's structure below a ledge, where it is effectively hidden from view but is set up with a watertight separation between the pool and the tank.

I also decided to use the existing Palm tree planter as an anchor to the overall space. I had wanted to demolish the stone planter, rebuild it as part of the pool wall, then veneer it as before (another idea the client rejected), so instead we integrated the look by raising the bond beam of the pool to make it appear to be an extension of the planter's structure.

As is the case with most exterior designs, the colors we used were critical – especially in so small a space. I like working with dark interior colors for watershapes to enhance their reflective qualities, and in this case I wanted the pool to be a mirror that would truly extend the sense of space in much the same way interior designers use mirrors to make rooms seem larger.

Wanting more than the reflective surface, I decided to add some additional dimension to the space by contrasting the pool's darkness by using the above-mentioned coral-colored tile atop the thermal ledge, thus creating an area in the foreground that draws attention through the water to the pool's interior finish and lends additional visual interest (another dimension) to the overall composition.

The surrounding hardscape is finished with black absolute granite along with a dark local stone. This local stone is a beautiful material with spectacular veining and subtle color variations. It's also very dense and, when cut, presents what almost seems like a deliberately polished surface. To the best of my knowledge no one on the island has ever used the material in this fashion.

A MESS IN TEXAS

The second project featured here moved forward in an upscale neighborhood of Dallas. It posed site challenges of its own, including the oversized existing pool, the confining house and fences and an overhead wooden deck with multiple support posts that intruded on the pool's space below.

The design approach here involved eliminating as much clutter as possible, enhancing utility and opening the space visually to the greatest possible extent. In this case, my approach was about segmenting the space and using soft transitions to create sensations of variety and movement within the long, narrow yard while doing a better job of balancing the proportions of pool, hardscape, deck and landscape.

To do so, I worked with a pair of vertical elements – two tiled, arched panels that rise above the outer edge of the pool. These serve both to reduce the "looming" quality of the existing fence and change the visual nature of the yard's boundaries. The arches include tiled weirs that spill water into the pool as well as what are apparently remnants of an old stone wall that soften the arches as they disappear into the landscape.

Before we really could get started with those smaller details, however, we had to deal with the immense problem of the overhead deck. In my discussions with

the client, I heard that it was in near-constant use and was also the main traffic conduit for accessing the pool, which meant that removing or reducing it (my preference) was completely out of the question.

The overhead deck was not the issue in and of itself; rather it was the presence of the eight wooden posts that supported it and added considerably to the clutter of an already crowded space. There was also the fact that the posts didn't fit in the old-world motif the clients craved.

The solution turned out to be fairly straightforward: A structural engineer was retained to design a new deck-support structure that would minimize the intrusion on the space below, and all it took was an I-beam supported by two metal posts. The trade-off of two metal posts (clad with cast stone) for eight wooden posts was just perfect.

For the pool itself, the client wanted a shallow game pool with a spa, which meant raising the floor of the old, deep pool. Again, we consulted with the engineers and modified both depth and size, the result being a pool that has about 20 percent less surface area than it had before to free up some much-needed deck space.

SUBTLE SOLUTIONS

The basic design approach here involved playing with vertical elements, reflectivity and color.

Vertical elements can exacerbate a sense of confinement if not handled properly. In this case, for example, linking the two arches with a solid wall would have made matters worse in the yard rather than better. As they stand now, the arches we developed by playing with models beforehand now work beautifully together, softening the lines on the back side of the pool and rising to a level that fits proportionately within the space.

And as the landscape matures around and between the arches, the softening effects will be enhanced to a point where the environment will seem remarkably open despite its narrow confines.

The use of color enhances these effects with a palette that includes a variety of dark, rich colors. Inside the arches, for example, we used the Moroccan Desert mosaic blend from Oceanside Glasstile (Carlsbad, Calif.) to accentuate the shadow effect and create a dark spot that retreats from view and opens the space.

The spa is somewhat large relative to the pool, but it was sized to meet the client's desire to entertain guests in the spa. We used the same Moroccan Desert tile here, but to a different effect in that the dark color downplays the spa's large size relative to the pool while enhancing its reflective qualities.

Setting up the spa with a perimeter-overflow treatment is another approach we used in attempting to maintain a sense of visual balance between pool and spa. As stated above, the use of the overflow detail sometimes is advocated by the designer for no other reason than the adequacy of the budget rather than for purposes of the

In this case, clearing away visual intrusions was the key to opening a small space to its fullest potential. The elevated wooden deck was too important to remove, so we lightened the visual load from all angles below by replacing the wooden supports with a new system of I-beams and posts.

design. Judging the extent to which these measures work is in the eye of the beholder, of course, but we did what we could to manage visual weights in a way that brings things into balance.

Above all, we worked to ensure that the water's overall surface would be perceived as a single reflective surface, both as a means of deflecting attention from specific elements within the watershape and of drawing eyes to the arches, stone columns and surrounding landscaping beyond the water's edge. The result is that the pool and spa mirror the surroundings and visually increase the perception of spaciousness.

This project also involved us in enhancing the nighttime experience of the backyard with the installation of several low-voltage lighting fixtures within the deck structure and in some of the surrounding trees for a moonlight effect. The clients wanted garden art as part of the overall composition as well.

With most of my clients, I offer services beyond backyard design and construction. I will shop for furnishings, statuary and even outdoor textiles in some cases — and this project was one of them. On one such shopping excursion, a bronze lion with a beautiful patina was selected for an out-of-the-way planting bed. This statue recedes into the landscaping during the day but is a well-lit focal point by night – a simple element that is one of the most visually arresting on the entire site once the sun goes down.

RESTING ASSURED

Most of the projects I've done in limited spaces are defined by the fact that working on small canvases almost invariably leads to compromises.

In both of these projects, for example, I was working with clients who had definite ideas about what they wanted, and those desires occasionally didn't align with what I considered to be the best design solutions. That said, much of the fun of projects like these is the feeling you get that you're essentially solving a puzzle.

It's reasonable to assume that as lot sizes in the U.S. real estate market continue to shrink relative to the size of new houses, there will be a growing premium on designs for smallish backyard spaces. This will increasingly force us, as designers, to confront issues of intimacy, proportion, color and traffic flow on levels few of us probably want to consider – but the opportunities to do so will increasingly be there, and I for one will welcome them.

To be sure, I enjoy working on projects where space isn't an issue, but I have to say that I've come to love working in confined areas and find a particular level of satisfaction in making multiple visual elements work in close quarters. For me, there's something special in designing a compact space with details that enable those who view the space to come away with the feeling that they've had a rich and enjoyable experience.

Small, large or in between, isn't that what watershaping and exterior design are all about?

The view from the new spa is engaging both day and night, with the arches and landscaping softening the sense of confinement caused by the proximity of the fence beyond – and some well-placed lighting lending a sense of drama to the setting when the sun goes down.

Simple Transparency

It may be true that clear water is a hallmark of success for most watershapes, but in the world of naturalistic watergardening, there's often an unstated tolerance for green or murky water. While a rich soup of plankton might be beneficial for fish farming, master watergardener Anthony Archer Wills argues that crystal-clear water in streams and ponds enables watershapers to add extra dimension to their projects in the form of total underwater landscapes.

By Anthony Archer Wills

Think of it.

Just below the surface of our ponds and streams is a wonderful potential for beauty, an amazing opportunity to open observers' eyes to an entire submerged "landscape" made possible by virtue of completely clear water. I like to picture it as an "underwater garden," which is why, to me, water clarity is an essential component of my ponds and streams.

Too often, however, I run into settings in which it simply has *not* been a priority for the designer or installer. I'm further distressed when the subsurface views I treat as key design elements are left partially or wholly unconsidered.

I think back to my family's trips to the seashore, where we would spend hours observing rocky tidal pools. Peering into the water and seeing a world of oceanic plants and animals at close proximity was a profound source of fascination and excitement. It is for me still – and, I believe, for most other people as well.

What I see in tide pools is a perfectly balanced, utterly natural underwater garden filled with beautiful stone colors, textures weathered by the action of the waves and tides and a plethora of pebbles and sand mixed with bits of seashell.

It is here that we may caress the smooth rock formations that have been sculpted through the eons by the motion of water. There are also countless varieties of algae known to us as seaweeds, with their spectacular leafy structures dancing and swaying with the currents and filtering and reflecting sunlight in endless symphonies of color and movement. Then there's the enthralling spectrum of marine animal life.

All of this is why I believe that we must consider water clarity during the design and installation phases for our watergardens.

clear and clean

In considering water clarity, I've always thought that we have much to learn from the world of aquariums, where the entire focus is the underwater environment. Here, the beauty and complexity of the scene is limited only by one's imagination, with the rocks, plants, sands and fish displayed with an almost surreal clarity beneath the "grow" lights.

With aquariums, there's a deliberate effort to recreate the beauty of a tide pool in the home – a goal that we as watershapers should endeavor to emulate in our exterior works. In my artificial settings, clear water is not for me an optional or secondary concern: It is one of the most intrinsic and significant of aesthetic design elements.

It is only through the presence of healthy, clear water that our interest in the underwater garden is rewarded.

I'm mindful of the fact that clear water is a product of healthy, balanced, natural systems, the generation of which in many respects should be the prime directive of the shapers of ponds and streams. It's the potential of these underwater gardens that makes us strive for clarity; at the same time, it's essential to note that these gardens themselves can become agents for generating clear water on their own.

It is in this context that we watershapers all must begin thinking about the importance of balanced biological environments – and for good reason, because there's an amazingly complex set of symbiotic relationships at work in our ponds and streams.

Consider the ways in which rock, gravel and sand formations provide havens for beneficial bacteria, algae, sponges, crustacea and myriads of other tiny organisms. Together these form a wonderful process. Bacteria break down dead organic material into dissolved inorganic substances. Using these and other nutrients in the water (and aided by sunlight and carbon dioxide), the green plants are built, liberating in the process large quantities of oxygen.

This plant material provides the nour-

The prominent role plants play in creating and sustaining water clarity cannot be underestimated. This single pond is healthy and well-balanced and features an abundance of water-loving plants – all of which have roots that consume bountiful quantities of nutrients, help to keep algae at bay and serve as a consequence to generate crystal-clear water.

ishment for all the aquatic creatures that eventually become food for the fish. The more varied and interesting the habitat, the richer will be the flora and fauna and the greater the beauty and the happiness of the fish. And I learned early on that a happy fish is a healthy fish.

The issue of water quality is, in fact, inextricable from aesthetic elements that foster clarity: The health of both animal and plant life depend on quality water, while at the same time, quality water depends on the presence of thriving aquatic organisms. That relationship (and our understanding of it) is absolutely fundamental to the design of any system that contains life.

wild at heart

In my days of running an aquatic nursery, I became quite in tune with the needs of fish. It wasn't long before I began thinking in terms of "furnishing" bodies of water with those needs firmly in mind.

We found that those environments in which fish thrived were also the same bodies of water that had the greatest visual variety with respect to the underwater scene in addition to the most desirable water quality. These bodies of water never required attention or curative water treatment; indeed, it was not lost on me that the most beautiful underwater gardens were also maintenance-free.

In the context of raising fish and aquatic plants in man-made environments, it's fair to say that the underwater-garden concept paid off when we transferred our understanding of natural relationships to our artificial pond and stream environments. Here, we saw that the importance of "natural balance" was even more profound.

As with the more important aspects of watershaping, observation of nature is essential, and among the most informative models are natural streams where we see crystal-clear water flowing over beds of smoothed stones and pebbles. On becoming intimately familiar with certain streams over an extended period, I observed that the only time any cloudiness developed would be after a storm, when soils and perhaps even fertilizer were washed into the stream. Invariably, those streams cleared up very, very quickly.

I began to consider what it is that's different about clear streams compared to those that have more turbid water. What we see in the healthier streams is a pair of important common elements:

- First, there are abundant aquatic plants that cling to the edges and gravel beds of the healthy streams, with the root systems as well as the waving beards of foliage extending into the water to play key roles in water quality. These stem, leaf and root structures are home to a range of microorganisms and small creatures, including shrimp (*Gammarus*).

You see this when you remove such a plant from a stream: It's almost always laden with life – beneficial communities of plants and animals that absorb nutrients, feed on algae and provide food sources for larger animals such as fish. In sum, healthy streams almost always host extraordinarily dynamic and complex biological communities.

◗ Second, and utterly inseparable from the animal and plant life, is the presence of beds of pebbles and rocks of various sizes. Essentially, this enables the entire streambed to serve as its own biological filter. Again, when you pick up a single pebble and look at its underside, you might see splotches formed by bacterial colonies – and that's just one pebble among *millions*.

clear assists

A stream also gives us a wonderful opportunity to use the mechanical energy

As a watergarden designer, I cherish the capacity of clear water to reveal underwater structures, channels, currents – a whole subsurface geography and ecology. I see the definition of of these amazing contours as a culmination of the watergardening exercise – and as a level of thoroughness to which all designers of naturalistic watershapes really should aspire.

of moving water to its own benefit.

In the large streams I've constructed, for example, not only will we place gravel along the entire streambed, but we'll also create banks of gravel (averaging 3/4 inches in size) over and through which the water will flow. In almost all of these situations, I've been able to guarantee that, within a week or so, the water will be completely clear and largely self-sustaining, almost always without the use of supplemental filtration or water-treatment technology.

That said, it is *extremely* important to recognize just how useful filtration technology for ponds and streams can be. In my view, the development of mechanical biofiltration units (along with ultraviolet and ozone water-treatment systems) has been absolutely crucial to the development of the stream-and-pond market: These systems have enabled tens of thousands of consumers to enjoy beautiful, clear water in their backyard stream and/or pond systems.

These biofiltration components and water-treatment systems are so important largely because, at a given level of the industry, a great many people are not patient enough to develop systems that are self-sustaining. In many situations, in fact, consumers will do things to a point of excess, loading relatively small bodies of water with overly high concentrations of fish life that foster excessive nutrient levels.

This is an important point: The presence of plants and animals does not *alone* ensure water quality; in fact, those elements must be present in proper proportion to the given body of water. Situations in which, say, a dozen fish would be perfect are undermined when people populate the water with, say, a hundred fish. In those situations, nature cannot cope with the biological load and will need help: In these cases, mechanical biofiltration (supplemented or not by water treatment) is the only path to water clarity.

In nature, we seldom see these overstocked bodies of water: Fish will begin to eat their own eggs, or their mortality rate will rise until the "system" naturally achieves balance. In man-made applications that are re-circulated and contained, overstocking creates hazardous conditions that can result in the wasting of tremendous amounts of money on the one hand and in poor water conditions on the other. I have always maintained that it is far better to have a few fish you *can* see than lots of fish you *can't*.

This much is absolutely clear: Many otherwise beautiful underwater scenes

are rendered useless by cloudy water caused by overstocking.

self-sufficient

Although I am an enthusiastic advocate of "outboard" filtration and treatment systems, through the years I've come to believe that, ultimately, any stream or pond system can be made to be self-sustaining provided you do the right things. In fact, when I started in the business, one couldn't even *buy* a pond filter, so the only means for generating clear water was to learn to work with nature to create balanced environments.

Perhaps my favorite approach to filtration involves the use of under-drain manifold systems that effectively make a body of water act as its own biological filter. It's an elegant approach: Perforated plumbing draws a column of water through a bed of gravel, so the biological filtering action that occurs within an outboard filter takes place instead in the floor of a pond.

While it is preferable to make the filter

pond separate from the one containing the fish, there is no reason why this filtering pond should not be a feature of great beauty: There is no limit to the size of these systems, and in conjunction with suitable plantings, they can make a system virtually maintenance-free.

The first time I deployed this approach was in a large pond for a customer who maintained a fantastic collection of valuable Koi, many in excess of 18 inches in length – truly amazing specimens.

I established a pond especially for the Koi that would provide them with a comfortable home and clear water so they could easily be seen. At a slightly higher elevation, I constructed another pond of just one-third the size that contained perforated pipes set up in a herringbone pattern and encased in a bed of gravel. Those runs fed a large manifold that in turn connected to a clear-water chamber – a sump that welled up and spilled over a waterfall into the Koi pond.

Some eight years after I installed the system, I had occasion to talk to the homeowner and ask him how the system was working. Although I knew the filter should be reliable and easy to maintain, I admit to being somewhat amazed when he told me that in the entire time since the pond had been installed, he hadn't touched it at all. It had been *completely* self-sustaining.

I had similar success early on with a massive pond used for raising trout – *very* sensitive to water quality. Here, I installed a filtration bed that was some 60 feet across, and it too ran beautifully for years, maintaining tremendous water quality. Based on these and other experiences, I became very comfortable with this form of filtration and have since used it on a great many projects.

Through experience and experimentation, I found that it was only the top few inches of gravel that contained the vast majority of anaerobic bacteria and creatures that provided the filtering effects. Thus, surface area is far more important to the success of the system than is depth, which is why I always try to spread these beds out rather than worry about making them deep.

root of the matter

Years later, I began working with what some describe as "bog filters" in which I would establish shallow areas with submerged drainage – the difference being that the gravel beds in these bogs were planted with reeds and other forms of emergent plants. These systems have the added benefit of using the plants' root structures to absorb nutrients.

I came upon this approach in the 1970s while working with plants set on pond edges in planting baskets: I observed that

emergent plantings would quickly use up the soil in their baskets and would send out fine networks of adventitious roots into the pond in a quest for nutrients.

It became obvious to me that these root systems were playing a key role in water quality, so I decided to enhance this natural effect. I did so by planting bog areas and drawing the water through the resulting mat of fine root hairs with the suction provided by a network of buried drainage pipes.

To my mind, this is a perfect marriage of nature and artificial systems: They always seem to work out effectively, and creating these configurations is really quite easy to do. I've found that pretty much any type of emergent or marsh plants will work – provided, of course, that sufficient quantities are used.

I've had a number of discussions with other watergardeners about this process and find that there are two distinct approaches – one in which the water flows downward into the gravel and the root systems, the other in which the water wells up. (It is also possible to run the water *sideways* – that is, down an inclined shelf.)

My preference has always been to design the filter so water is drawn down into the bog instead of the reverse. Water welling up through sand creates quicksand, and I always worry that upward flows might lead to instability and the return of dead leaves and rotting detritus into the pond. It's also been my observation that things work well trickling either downwards (or sideways).

the oxygen factor

As has always been the case with outboard filtration units, aeration systems of any kind have been a huge help to pond designers and installers across a wide range of applications. I commend aerator manufacturers for giving the pond industry an extremely helpful tool, because the dissolved oxygen these devices introduce to ponds is crucial for the decomposition of organic compounds that make their way into the water.

Oxygen is indeed a key player in nature, where the game is always about keeping everything in balance. As with separate filtration systems, I use aerators only when absolutely necessary, mainly because I've found that the oxygen released by aquatic plants is usually adequate. But I see their great value just the same.

There are situations, however, where it's essential to give the natural processes of oxidation and decomposition assistance by using an aerator. In ponds that have a high oxygen demand as a result of excessive decaying organic matter or an imbalance in the ratio of plants to fish, for example, plant material alone may not do the trick – partly because plants don't produce oxygen at night.

Ponds and streams on golf courses are

In these cases, water-friendly plants have been used in creating bog-like ecologies in which the plants send copious quantities of exploratory roots into the pond to absorb nutrients – and also serve to filter all the water that flows through and around them, either sideways or down through the planting bed.

The Myth of Flow

There's one area in which the casual observation of nature can lead to misconception, and it has to do with water circulation and flow rate. Indeed, watching a natural stream can lead you to the false conclusion that water needs to flow vigorously or rapidly to be clear.

Although flow that creates action over waterfalls and rocks and through gravel beds is indeed useful in many circumstances, it is not essential. In a perfectly quiescent pond, for example, the wind, the temperature differential in the upper layers and the movement of fish will create circulation and chemical exchanges at the surface that are more than adequate.

To me, this discussion boils down to the self-evident fact that we do *not* see bodies of water where one part is clear next to another that is not. Other than in areas influenced by some sort of recent or repeated disturbance, water quality tends to be mostly uniform within natural systems. (Deep lakes and ponds are an exception where annual temperature stratification occurs.)

I've had some vigorous (and invigorating) debates with various people on this issue. In one project, for example, I recall working with an engineering company that wanted to place skimmers all around the edges of a medium-size pond – something like a dozen skimmers in all.

Not only did this force me to figure out ways to disguise all of those skimmers, but I argued it was completely unnecessary in that the flow required to generate biological filtration and beneficial interaction among plants, animals and water was in fact quite minimal. Again, you never see a pond where one part of the bottom is visible while another part at the same depth is not. Water by its very nature mixes: It is, after all, a fluid of minimal viscosity. In my work, I've found that a single source of suction and a single source of return flow are almost always sufficient.

Water quality is like smoke in a room: If it's in one corner of the space, it's going to make its way to the others as well. If anything, too much flow can actually be a problem: In its headlong rush, there might not be adequate contact time between the water and various biological elements to allow for the subtle chemical processes that must transpire.

– A. A. W.

commonly fitted with aerators because water in these settings is absolutely laden with plant nutrients and managing dissolved oxygen levels is critical. These are situations in which you might find countless acres of constantly fertilized turf draining into ponds or streams.

With limited space as well there is almost no way to develop an ecosystem that can handle such a load – typically rich mixes of sulphate, phosphate, nitrate and potassium – which is why these waterways are so often subject to spectacular algae blooms. While such richness might be useful in fish farming, unsightly rafts of filamentous algae can develop in waters that aren't managed properly.

Aerators also prove their worth in fish ponds subjected to long spells of hot weather that can result in high water temperatures. The higher the water's temperature, the less oxygen a pond or stream can hold – a situation that can lead to oxygen depletion and in which aerators will help to keep the water well oxygenated.

Most ponds that I've seen with severe water-quality problems also happen to be those that lack adequate amounts of aquatic and emergent plants that are crucial for both the absorption of nutrients and the production of oxygen. In these situations, nature doesn't have a chance to find its own balance: A well-considered planting program will help and, if necessary, can be augmented by aeration.

clear eyes

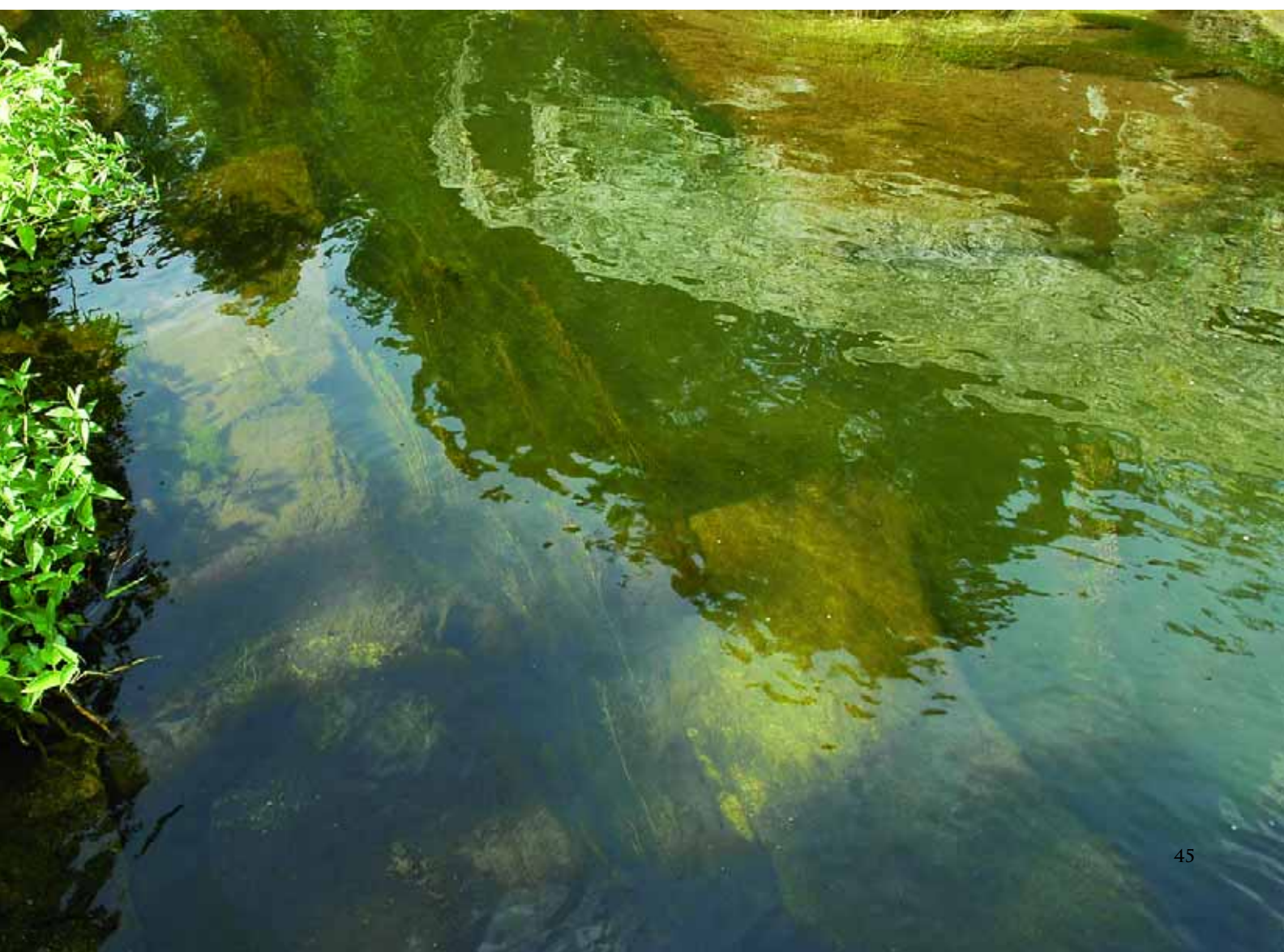
All ponds and streams are different, of course, with tremendous variations with respect to size, plant material, animal life, surrounding environmental conditions and more, thus making it difficult to generalize and make recommendations about what might or might not be the best way to achieve superior water quality. Quite simply, every project must be considered on its own terms: What might be a perfect solution for one situation may well not be the best for another.

On a number of occasions, for instance, I have used Barley straw in a pond to reduce algae and improve water quality. There seems to be a natural algaecide that is exuded into the water. In addition, the straw encourages the production of myriads of minute algae-devoring creatures that are able to escape predation among the straw's matted strands.

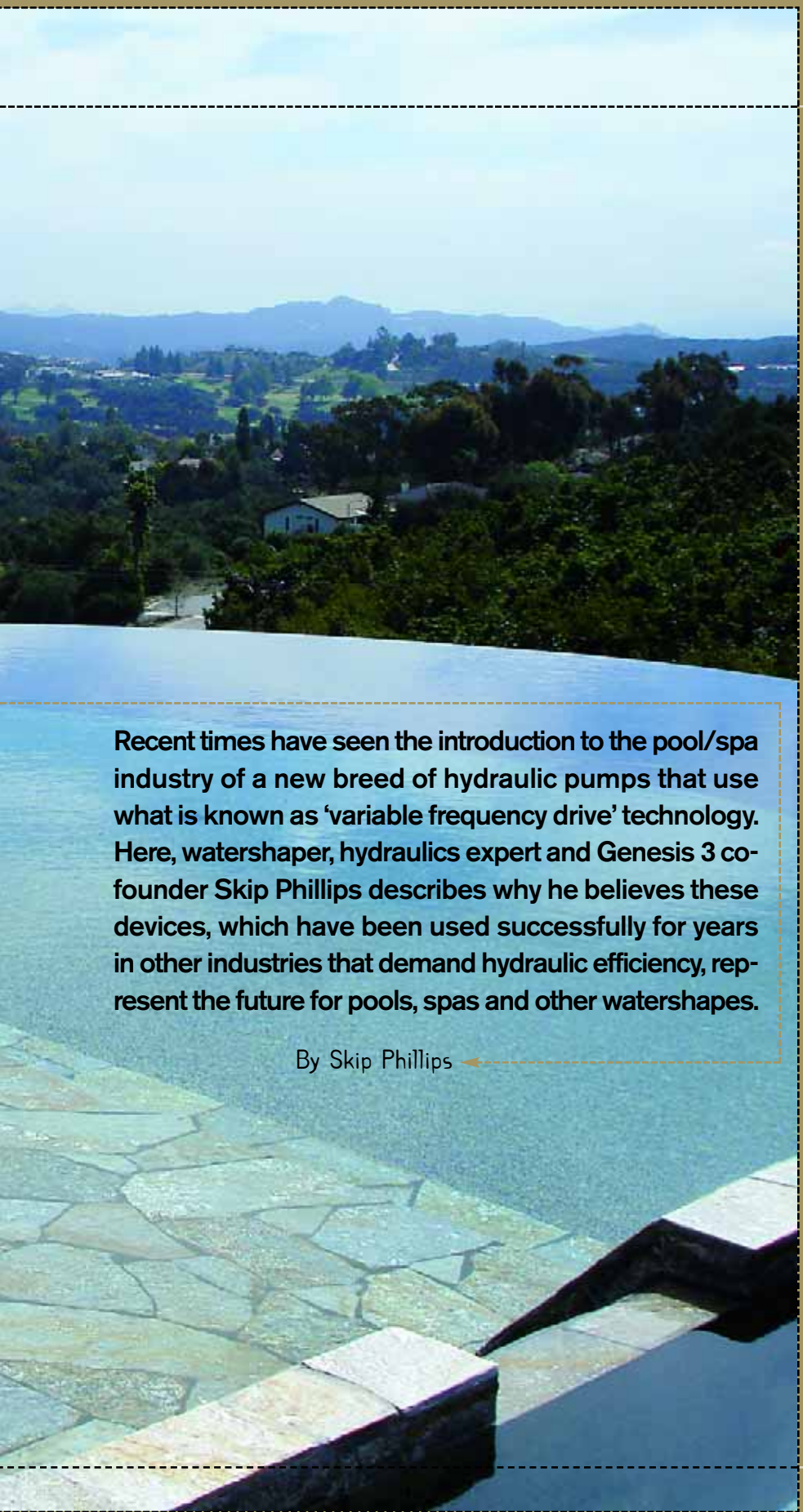
In my work, trial and error and large doses of observation have been the best teachers. The key is to pay attention and determine the true nature of the relationships among various elements in the system, be they plants, animals, filtration approach, water volume and many other factors – and to monitor the results carefully. Happily, we can start sure in the knowledge that plants and animals have complex symbiotic relationships, that rocks and gravel can play major roles, and that all bodies of water require oxygen in order to process organic matter.

How exactly you achieve a balance among all the elements of a watergarden is always going to be a little bit different. When you understand the basic, natural dynamics in play, then you can begin to control the watershaping process so that the waters are as clear as a quality gin in a Waterford glass goblet.

The effective encouragement of water clarity pays off in innumerable ways, both aesthetic and practical. On the beauty side, it sets the watershape up to reveal its underwater structures with brilliant clarity – and serves as a pristine reflective surface for surrounding plants, clouds and skies. On the functional side, it sets up a watergarden for flawless, long-term, low-maintenance performance – the kind of achievement that makes the homeowner believe they are actually in the presence of a natural, self-sustaining water system.



Quiet Efficiency



Recent times have seen the introduction to the pool/spa industry of a new breed of hydraulic pumps that use what is known as 'variable frequency drive' technology. Here, watershaper, hydraulics expert and Genesis 3 co-founder Skip Phillips describes why he believes these devices, which have been used successfully for years in other industries that demand hydraulic efficiency, represent the future for pools, spas and other watershapes.

By Skip Phillips

For all the progress made in recent years to change the nature of the game, to this day I still see situations in which pumps, filters and other system components for pools, spas and other watershapes have, hydraulically speaking, been completely misapplied.

This has resulted in the ongoing proliferation of costly noisemakers that drive neighbors crazy and send our clients into states of depression when their electric and gas bills hit their mailboxes. And all of it stems directly from the industry's near-complete blindness – unnecessary, irresponsible and in many cases when litigated, indefensible – when it comes to the importance of proper hydraulic design.

It's become my personal crusade to try to change this situation for the better. And the damage being done by general current practices cannot be overstated: Instead of providing visual beauty, enjoyment and recreation, the poorly conceived systems that are being installed right now will inevitably become significant sources of aggravation for their owners. Ultimately, that's not good for the industry on any level, and I for one have long believed that it's been up to us to develop our own solutions to these problems.

Fortunately, I think we're now seeing the potential for a quantum leap on that front, courtesy of the introduction of what are known as *variable frequency drives*, that is, pumps built with a technology that radically slashes both noise output and energy consumption. It is a long-overdue advancement whose time has come.

Driven by Variables

Despite years of being told otherwise by those who push the "bigger is better" mentality, we now know without question that upsized plumbing and filters combined with downsized pumps are a big part of the solution when it comes to both noise and running costs. Indeed,

this is an approach that's been endorsed over and over again in the pages of *WaterShapes* since its inception.

The advent of variable frequency drive (VFD) technology takes the discussion to an entirely new level: These are pumps that have the ability to adjust the speed of their impellers up or down to meet the varying flow demands that occur within given systems – a simple idea with profound implications.

For their part, conventional centrifugal pumps can only provide a set amount of flow relative to conditions in the system as a result of the fact that their impellers spin at only one speed. This means that, depending on the variable loads occurring within a system, the pump will operate at varying levels of energy efficiency and noise output.

VFD technology changes all that. In fact, it alters the way we think about pumps altogether, relegating the term *horsepower*, for instance, to virtual meaninglessness because these pumps operate across a *range* of what might be considered "horsepower equivalencies." Thus, a VFD pump isn't a three-horse pump; it is instead a zero-to-three-horse pump. And pump curves lose their relevance because of the VFD pumps' ability to conform to specific system demands. Instead of horsepower and pump curves, in other words, VFD technology is about amperage draw and the pump's job description.

VFD pumps have long been used by water utilities, waterparks and various processing businesses for which variable flow demands have always been *the* defining issue for engineers. Although pools, spas, fountains and other watershapes would seem to have been a natural outlet for such a technology from the start, only now is it becoming available – and I for one am very glad it is.

Consider that in a typical installation these days, we generally find three pumps (at least) to manage three systems – one for primary heating and filtration, another for a water effect (a vanishing edge or waterfall or pressure-side cleaning system, for instance), and a third for the spa jets. Within the primary circulation system alone there will always be variable flow requirements. When a solar heater is on, for

My first exposure to variable frequency drive (VFD) pumps came in this remodeling project, where introducing the new technology to this pool and its long vanishing-edge/perimeter-overflow system produced astonishing reductions in energy consumption and made me more than a little receptive to working with VFD pumps in other projects.

example, the flow requirement goes up, and the same is true when an ozone or other chemical-treatment system is initialized.

A conventional primary circulation system might have four different scenarios and flow requirements based on which components are running at any given time. With VFD technology, the pump adjusts its flow output to correspond to shifts in demand that occur when devices such as chemical or heating systems come on line.

To the Test

The virtue of VFD technology is that these pumps work only as hard as they need to at any given time, so they offer the advantage of providing optimum flow levels for every scenario a system's operation might present. This translates directly into what I've found to be massive energy savings and a reduction of noise that I can only characterize as astounding.

In the summer of 2005, I was approached by an equipment supplier (Pentair Water Pool & Spa, Sanford, N.C.) with a request to use my own backyard pool and spa as part of beta testing of their new VFD-based pumps. I was immediately intrigued by the concept and agreed to revamp my system completely using three of the new pumps to govern, respectively, the primary circulation, the spa jets and the vanishing edge.

My system also includes an ozone sanitizer, a chlorine generator and a solar-heating system, the latter in addition to a gas heater. Given the relative complexity of the system, it seemed to everyone involved that this would be an excellent case study for how the pumps responded to different operating scenarios and differing flow requirements – exactly the factors VFD technology is meant to accommodate.

Much of my excitement was prompted by the fact that I'd already been exposed to VFD technology through a company called Ikeric Pumps (Bakersfield, Calif.) – the first firm I know of to offer VFD pumps to the pool and spa industry. I'd used one on a remodeling project and found that the technology was almost too good to be true: The remodeled pool now has a three-horsepower-equivalent pump that runs a long vanishing-edge/slot-overflow system along with a one-and-a-half-horsepower-equivalent pump running the primary system.

In a typical application such as that one (or mine), the edge pump would run at about 14-plus amps. The pump on that remodeled pool did the exact same visual work with a draw of just above one amp. It's interesting to note that the smaller pump that ran the primary system operated at just above two amps – a near-seismic change in power consumption, and the smaller pump uses more power than the bigger one. (In this case, the disparity resulted from the fact that we were able to upsize the plumbing lines for the edge system to three inches but were restricted to using mostly two-inch lines on the primary system.)

It was easy to see even from this single experience that the old rules simply did not apply with this new technology.

With that remodel as a backdrop, I was more than eager to jump into the work in my own backyard. Through a period of months, I collaborated closely with Pentair's Rob Stiles, Steve Zorn and Tom Schoendienst, reconfiguring my circulation system and establishing set points for pump operation.

The existing system had been built around conventional centrifugal pumps. With everything running, they drew between five and 14.5 amps each, which by

The Chemical Connection

Part of my exploration of the effects of variable frequency drive (VFD) pumps has been about how the new technology plays into the question of chemical treatment. The effect is twofold, so far as I can tell – and is in both respects significant.

First of all, because of the pump's ability to change speeds when demand changes, we were able to reinstall my ozone system (in this case a corona-discharge unit from ClearWater Tech, San Luis Obispo, Calif.) without using a separate booster pump. I relied here on expert help from ClearWater's Marc Debrum and Charlie Furtney, and they let me know that their company was unaware of any other of their systems running on this technology.

They were convinced going in that a separate, dedicated booster pump would likely be needed to generate adequate vacuum through a Mazzei injector. We collectively gambled that we could operate the system using one of the new pump's presets – and it worked. This fact alone means that ozone systems will be less expensive to install simply by leaving out the extra pump. In my own backyard, the VFD pump now runs the ozone system at just about half the amperage draw that the separate booster pump would have required.

Because the whole system now runs at a fraction of the former cost, I also run it for much longer periods of time – at this writing for about 14 hours a day at less than half the former cost of running it for just eight hours with centrifugal pumps.

For an ozone system that must be running to be effective, the net effect of increased running time is greater sanitizing and oxidizing capacity. This means in turn that there's less pressure on the supplemental sanitizing system I've used with the ozone unit. (Ozone dissipates quickly, so it is almost always used with a secondary chlorine or bromine system.)

Then there's the overall noise reduction: On my own pool, the ozone system is now the loudest component, with its soft "whirr" completely masking any sound of the VFD pumps. (I've found that the levels of ambient noise are now so low that even a gentle breeze will do the same.)

To this point, I've yet to use my chlorine-generating system because the ozone has been able to keep up with the sanitizing demand. I am aware, of course, that this is not the recommended way to use ozone and that, in the 10 hours a day the pumps aren't running, the water is essentially without a sanitizing agent. What's worked for me through the cool winter months probably won't hold up through warmer weather, but so far I've had great water quality since upping the running time of the ozone system.

– S.P.

The use of VFD pumps simplified my equipment pad by reducing the number of pumps from three to two – a small saving in space but a substantial one with my utility bills. In profile, the VFD models aren't much different in appearance from conventional pumps, but they more than distinguish themselves when it comes to performance.

pool-industry standards is extremely efficient relative to the system's flow rates. In various combinations, the primary circulation system also operated a 14-panel solar-heating system as well as the ozone system, and I had been able to achieve a six-hour turnover at an amperage draw of 2.5. (Poorly designed systems run with *much* higher amperage draws.)

With everything running on the new VFD pumps, the system operates at less than 25 percent of its previous amperage draw. To say I'm pleased is truly an understatement.

Down With Noise

It bears mentioning at this point that these pumps are significantly more expensive than standard centrifugal pumps. Given their level of efficiency, however, the increased cost is amortized quickly and the pumps will indeed pay for themselves many times over during their service lives.

I can say that since I've been running the new system, my power bills have been

slashed to a fraction of their former cost – and then there's the noise factor.

In fact, even though energy consumption is a huge societal issue at this point – one that hits everyone and will only grow in importance in the future – it's actually been concern about noise that has been driving jurisdictions to impose onerous restrictions on pump use rather than the cost of operation.

With typical lack of aplomb, the pool and spa industry has expended its resources to fight the restrictions rather than jump out front and develop technical solutions. And the problems are only compounded by the ongoing dissemination of incorrect information about hydraulics, not to mention the granting of "design awards" to projects that are basically technical abominations.

Whether forced by regulators or not, the creative expansion of watershaping as a design/construction medium places a burden on our industry to improve. With pool and spa systems becoming more and more complex, the number of pumps being applied has increased dramatically. Naturally, that means the noise these systems commonly produce has increased, the result being that cities such as Del Mar, Calif., are requiring every equipment pad for every pool built to be contained within a vault of some kind.

It's easy to blame that situation on overzealous regulators, but given the fact that the pool and spa industry has set no decibel standard for any of its products, the people making the rules are left to their own devices and are imposing onerous requirements to abate perceived problems with noisy pool equipment.

If we'd been ahead of this issue in the way I think we should have been, a far greater number of our mechanical systems would have been built properly and in ways that would not have created noise-pollution problems. As it is, we haven't been doing our job, homeowners have become annoyed and a small number of people have made political hay out of the issue to a point where the situation is out of control.

Given the advent of quiet-running pumps – especially those with VFD technology – there is no reason our systems can't become almost completely silent. Indeed, my own equipment pad now has a noise level well below that of a quiet conversation. Lots of times, I've had to place my hand on a pump to be sure it's running.

It bears mentioning in the strongest possible terms that the presence of these systems does *not* mean that we no longer need to pay attention to precise hydraulic design.

A VFD pump can be misused in just the same way as can a standard centrifugal pump. Undersized plumbing will still lead to inefficient operation and increased noise, and the only way to exploit the potential of these new pumps to the fullest is to install them on properly sized and configured plumbing. (For me, from this point forward I will be plumbing all systems at three inches or larger.) With everything done right, these VFD devices become radically efficient and remarkably silent.

Back to Issues

As an industry, I believe we're at the threshold of a new era in hydraulic design and that those who don't embrace VFD and whatever other advanced technologies might come along will face an uphill battle.

Whenever I personally approach something new or unconventional, I always try to identify both the pros and cons. By not focusing on line velocity, component compatibility and job description, it's just as possible to compromise hydraulic design with standard technology as it is with VFD pumps. If that's the worst of the worries about these pumps, in my opinion the benefits far outweigh the possible drawbacks.

I see this technology as a sublimely easy sell with retrofits, where clients have ongoing utility bills for comparison. For clients with new pools, convincing them to invest in the technology might require a bit more selling, but I see this as a minor challenge when set against a backdrop of distinct advantages.

By my reckoning, this new technology should be a source of great optimism for everyone in the industry. On the one hand, those of us who are looking to advance our knowledge and our design/construction practices to incorporate superior hydraulics now have a wonderful new tool that skyrockets the potential for value engineering. On the other, people who don't take hydraulics seriously are running out of places to hide, now more than ever before.

I'm proud to lend my own name and reputation to the effort to expand use of this technology, no matter who manufactures the pumps – and I hope everyone will get involved before much time passes. Let me say that, from this point forward, I will install pumps of this type with confidence on every project, even if I run into reluctant clients and end up having to absorb the cost differential elsewhere in the job.

To me, with energy and noise becoming ever more critical issues, client satisfaction on both fronts is critical to our ongoing success and the expansion of the art and craft of watershaping. The future, it seems, is *now*.

Nothing about the appearance of my pool has changed much since I wrote about it in *WaterShapes'* June/July 2000 issue, but the transformation at the equipment pad has given me control over flows in ways that make efficient running of long vanishing edges, for example, much more attainable so long as proper hydraulic principles are applied.

Star Power

The implications of the new variable frequency drive (VFD) pump technology extend in every which way.

◗ Consider solar heating: Ever since this technology was introduced, it has always faced the challenge that the power it takes to circulate water through a solar heating system generally offsets the overall energy savings offered by the technology.

It's common for watershapers to deploy two-horsepower pumps to operate a system of similar size and location to my own. Mine, however, was once a benchmark for efficiency in that I was able to use a half-horsepower centrifugal pump to do the job. In this case, I've now cut that consumption by more than half through use of a VFD pump. All of a sudden, the "free" power of the sun has become much less expensive, and this fact has encouraged me to think about alternative heating systems in all-new ways.

◗ In recent years, some people have speculated that heat from the sun has been a significant factor in the delamination of plaster on vanishing-edge walls. In other words, the theory goes that the heat that accumulates in the structure as a result of exposure to the sun when the edge system isn't running pushes the bonds in the material beyond their capacity to adhere.

In a universe where systems can run cheaply through all of the hours during which the sun shines, such issues would become a thing of the past – or at least be of much-reduced significance.

◗ The operation of adjunct waterfeatures becomes more affordable, as does the running of spas. In fact, it doesn't take too much imagination to see how savings realized in the operation of the pool might just prompt homeowners to consider more readily *other* products that consume energy, such as outdoor lighting or electric-heating systems.

And, again, all of this can go on without concern about disturbing the neighbors with system noise!

– S.P.

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Cast acrylic and water are a great match, says Nate Reynolds of Reynolds Polymer Technology. Indeed, since the company started in the 1970s, most of its projects have been about containing large amounts of water while providing clear viewing for high-volume aquariums, display pools and other watershapes. Here, Reynolds guides us through some of the firm's most ambitious installations while discussing what it takes to design with acrylic.

Shining Through

By Nate Reynolds

When you ask people about transparent building materials, most people immediately think of glass. Glass is certainly stronger than most people realize, but it has never been an ideal *structural* material because of its weight, brittleness and structural limitations. With our acrylic products, by contrast, architects and other designers have found a material with which they can create substantial transparent structures that are much lighter and more versatile than those made with glass – and with a structural strength more than double that of concrete.

R-Cast acrylic (as we call it) is indeed an amazing material: Its uses span from the obvious pools, fountains or aquariums to awesome signage and seemingly impossible structures and lighting (to mention a few possibilities). Its combination of optical clarity with safety, strength, flexibility and UV resistance has allowed an increasing number of designers across a range of disciplines to embrace the material as never before.

There are several firms that provide acrylic materials to the construction marketplace, with ours – Reynolds Polymer Technology of Grand Junction, Colo. – providing the largest panels available using the highest-quality acrylic. Our unique casting methods, custom fabricating and technical support are all intended to allow design dreams to become reality, and we've been empowering all sorts of watershapers, architects and engineers to let their imaginations run wild since we first opened our doors in the 1980s.

GOING DEEP

As a supplier of these products, we're naturally enthusiastic about their use. What we've found through the years, however, is that a great many people still do not understand the wonderful potential that acrylic holds in terms of design – and that when they *do* discover what can be done with these materials, the creative possibilities are almost limitless.

Strength and clarity are qualities at the very heart of why acrylic is so useful for such a wide array of applications, especially when it comes to water. But even for us, figuring out these new applications took some time.

Many of our earliest projects called on us to manufacture windows for deep-sea

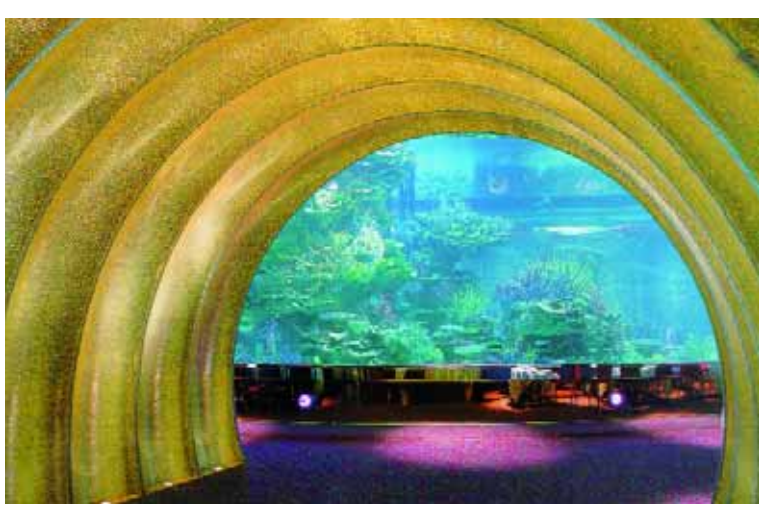
submersibles for the U.S. Navy and various scientific-research institutions. Obviously, windows on vessels submerged to the bottom of the ocean must be able to withstand thousands of pounds of pressure per square inch in a setting in which failure is simply not an option.

Our products worked out well for such applications because our particular expertise is making monolithic acrylic panels that are extremely thick. Where other manufacturers achieve thickness by laminating thinner panels together – a technique that is effective in many applications but has limitations in some with respect to size, strength and appearance, our panels are truly monolithic at the specified thickness.

Before long, we began seeing the advantages of this strength and design flexibility and became involved in the development of panels for commercial aquariums. In fact, we even started a subsidiary, International Concept Management, as a design/build operation that deals with nothing but such projects. It's a fascinating field in which designs center on the need to contain substantial bodies of water while encompassing education, research and entertainment – and providing the public with expansive viewing opportunities.

The fact that the clarity of cast acrylic does not diminish as

The most prominent of the applications of our acrylic products take the form of aquariums of all sizes and configurations. Whether they serve purely decorative purposes, inspire a sense of wonder or simply offer a distraction to people waiting in line or for a table, these vessels capture imaginations – and, in the case of the AquaDom project depicted on page 55 and 57, have become civic landmarks.



the material grows in thickness has enabled designers of these facilities to create truly daring projects in which entire structures are transparent. And we've built on acrylic's strength and clarity edge by not only making the panels stable when exposed to ultraviolet light, but also by making certain that any scratches or surface defects that occur can be polished and the surface restored to its original state.

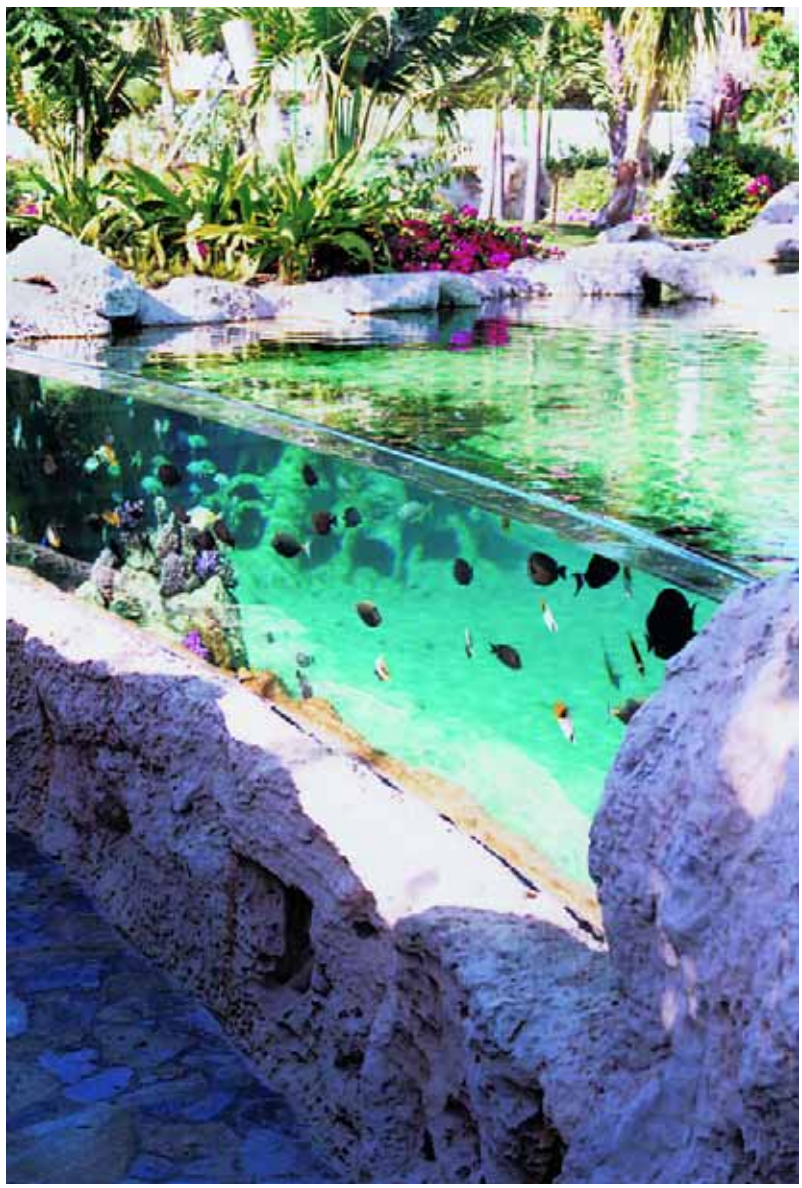
One of our first projects of the public sort was for Epcot Center in Orlando, Fla., where in the early 1980s we built three giant acrylic monoliths that stand in front of the silver globe at the entrance to the park. In such a setting, exposed to the elements through a period of several years, these structures would have been replaced long ago had they not proved durable and easy to maintain. For all that, they're still there, looking much as they did when first installed.

Water Works

Since those early days, we've spent a lot of time exploring the natural marriage between acrylic and water. At this point, in fact, upwards of 80 percent of our work involves aquatic applications.

On the aquarium front, we've seen tremendous progress with respect to sheer daring and creativity in many of these designs, perhaps most powerfully in the Berlin elevator project depicted in this article. We've also continued to push the limits of the technology.

Through the past several years, we've also seen the increasing popularity of tubular structures configured in such a way that visitors can travel through an aquarium and be completely surrounded by the underwater environment. Perhaps the best known of these are the water-



In residential settings, acrylic panels lend a dramatic window into both ponds and swimming pools and are an absolute natural when it comes to vanishing-edge details. Here, you can see the thicknesses that can be achieved as well as the optical clarity of the panels.

We've found through the years that designers' creativity seems to become elevated to another level when acrylic panels enter the mix. In this case, for example, what seems at first glance a fairly conventional pool takes on a whole different quality when combined with a basement aquarium that opens a window on an underwater world.

Fountain applications have always offered us special opportunities to show off the visual, structural and physical capabilities of our acrylic products. Whether the water is fully contained, overflows its vessel or is simply set off by the panels, the effects are dramatic and make compelling aesthetic statements.

slide tubes found at Atlantis, Paradise Island, Bahamas, where a pair of acrylic tunnels pass through a shark tank. (*Editor's note:* This spectacular effect was highlighted in "Welcome to Paradise" in our February 2004 issue.)

More innovative still, we recently completed the world's first all-underwater restaurant at the Hilton Resort in the Maldives, designing and building an acrylic-panel structure that's been sunk five meters underwater on a coral reef. The effect of this reverse-aquarium design is that diners enjoy 360-degree views of the surrounding reef while enjoying food that fuses Western tastes with novel Maldivian cuisine. In this case, the structure has a teardrop shape to optimize viewing and keep patrons close to the external environment.

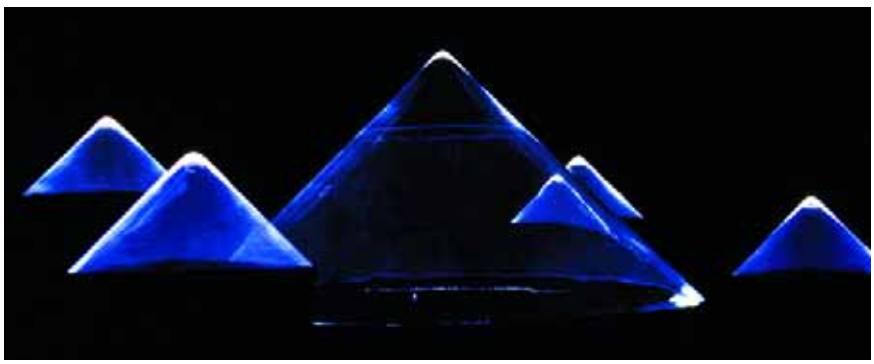
Another project of which we're particularly proud was completed in the late '90s for the Sudbury Neutrino Observatory in Sudbury, Ontario, Canada. In this case, a 40-foot-diameter sphere made of two- to four-inch-thick acrylic panels with more than 1,550 feet of optically seamless chemical bonds – all done on site a mile and a quarter beneath the surface of the earth in a clean-room environment. This facility is designed to help astrophysicists hunt for sublimely elusive neutrinos.

In every single one of these projects I've just highlighted, our work began with the experts (and competitors) saying these structures could not be built. Much of our pride in what we do extends from the fact that we're able to execute designs that at first flush seem impossible. For our part, it's our knowledge of the amazing qualities of acrylic that enable us to keep pushing the envelope.

Master Cylinders

Our acrylic's durability and strength are important, of course, but it is the material's ability to be used in creating massive crystalline-looking objects that make it so exciting and have placed the product on the cutting edge of watershape design.

One of the most dramatic examples ever of the potential of acrylic can be found in the lobby of the Radisson Hotel in Berlin, Germany, a project (mentioned earlier) that boasts the world's largest cylindrical aquarium.



Known as the AquaDom, the structure is quite mind-boggling in concept. In all, 150 tons of acrylic made up of 42 panels were bonded together as a cylinder rising to 52 feet in height with a 36-foot exterior diameter. *Inside* this outer cylinder is a 15-foot-diameter cylinder in which a two-story glass elevator moves guests to and from their rooms on the seventh floor.

We became involved with the project during the design phase in 2002. At that time, the architect had proposed a massive egg-shaped aquarium. We designed the structure accordingly and set a price that proved too high for the client. We then value-engineered our way to the current structure and its simpler design, going with a straightforward cylinder – and they went for it immediately. The structure is eight inches thick at the bottom and tapers to four inches of thickness at the top, where there's less static pressure for the structure to contain.

We manufactured the panels and shipped them unassembled to the site, where we bonded the pieces together. It was an 11-month undertaking: During assembly, we basically had to set the area up as a clean room so the bonding process could move forward without risking any contamination of the joints by dirt or dust – all while maintaining a regulated temperature level.

The result is spectacular: a completely transparent structure that contains more than 1,000 tons of saltwater, more than 2,000 fish, various reef formations – all suspended above the lobby floor for maximum visual effect. With more than 50 feet of depth, the divers who routinely clean the vessel actually have to equalize pressure to avoid contracting the bends. In other words, it's an aquarium so massive that divers essentially have to follow deep-sea diving protocols.

The transparency and durability of acrylic products have made them a medium of choice for all sorts of creative people other than watershapers, including sculptors, lighting designers, architects – and even scientists who spend their time thinking up practical ways to capture subatomic particles.

The glass elevator in the center of the aquarium is a cylinder within a cylinder and provides intriguing inside-out views as the elevator glides up and down. It's an amazing feature, one that has generated a tremendous amount of publicity for the hotel and has become something of a landmark in Berlin, a city known for its soaring modern architecture.

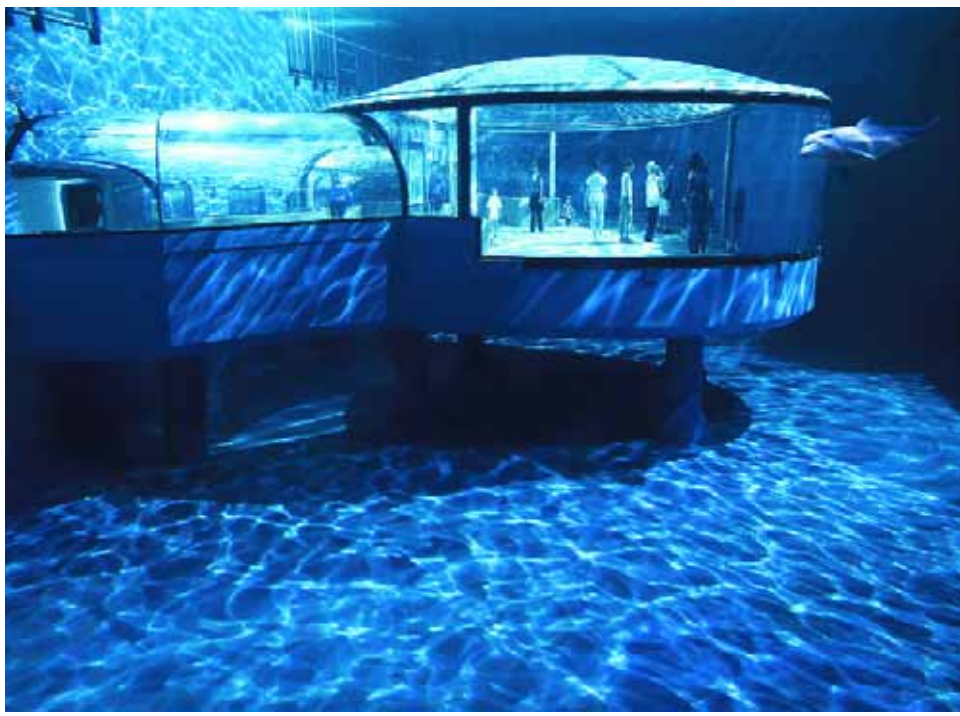
From our perspective, the project is a perfect example of how exciting these structures can be – especially when we're able to influence the design from the start.

Down Home

An innovative spirit has never been reserved only for such grand projects. In fact, we've recently seen designs for acrylic structures reaching into the residential realm, where we now find ourselves working on a range of projects having to do with swimming pools or large home aquariums (and sometimes both).

As an example, we recently completed panels for a combination aquarium/swimming-pool structure located on a beachfront property in southern California. As you sit in the basement bar of this home, you look through an aquarium that divides the pool from the basement.

Some of our commercial work is also being conducted on a small scale, as with the new Palms Residences in Las Vegas, Nev., where we're furnishing acrylic hot tubs for penthouse apartments' balconies on the 18th to 24th floors. In this case, the outside edges of the tubs are going to be completely clear so the views beyond won't



Of all of the ways in which we've applied our products, those that involve bringing people of all ages into close contact with the undersea world have always been among the most exciting and satisfying. For most of us, the oceans are beyond reach until someone invites us to see denizens of the deep at close range, safely and clearly.

be obstructed when the spa isn't being used – the first application of its kind.

We also get involved in non-aquatic details in retail and hospitality settings, where we provide designers with relatively affordable ways to distinguish their installations and attract public attention by exploiting the colors, textures and unusual geometric shapes available in our acrylic products.

No matter the project, we try to get in on the design phase at as early a point as possible, meeting with architects and designers to discuss the location and design and educating the architects and designers about the capabilities of acrylic. We then hit the drawing board, develop a bid and give the customer an idea of the cost. If the price is too high (as it was at first in the Berlin project), we revisit the program and do what we can to capture the spirit of the idea for less money.

Once price and desire are aligned, our engineers create shop drawings for our fabricators and we develop the molds required for the job. Sometimes this design and manufacturing process takes only weeks, but other times it takes years – as with the Dubai project on which we're still working at this writing.

One of the key issues we face with each project is deciding whether we can get the job done with a single casting, or instead need to make many panels and fuse them together. Much of this decision is about the practicalities of shipping: If the end result is simply too big to ship, we cast the assembly in pieces and send in our crews to do the bonding on site.

In some cases, structures are assembled using mechanical mullions – a straightforward process that is a matter of designing the correct installation detail to waterproof the structure. The bonding process, however, is more complex and can represent months of work on larger jobs. We've developed a bonding method that retains up to 90 percent of the parent material's strength while generating almost zero optical distortion. In other words, the bonds are essentially invisible.

Sky High

The applications of our acrylic products have become so creative and diversified that we have no way of knowing just how far all this is actually going to go in coming years – or *where*.

We have had intriguing conversations, for example, about devising full-blown underwater living habitats – the kind of proposal that keeps us hard at work in developing additives and coatings that will encourage specification of acrylic products in situations in which only metals and plastics are currently used.

For all that, however, we know that aquatic applications will remain the mainstay of our business for many years to come – and we think we've only just begun exploring the realm of possibilities that align what we do with the ambitions of creative designers, watershapers and clients.

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Of Interest

The following information has been provided to WaterShapes by product suppliers. To find out how to contact these companies, look for the Product Information Card located on page 66.

Compact Pool Slide

Circle 135 on Reader Service Card

S.R. SMITH has introduced the AquaBlast slide. Featuring a low-profile, compact design, it's made to fit almost any size swimming pool – even those with limited deck space. The 4-foot, 6-inch product comes with a water-delivery system that pumps out 20 gallons of water per minute for maximum sliding fun. The new model comes in gray, taupe, white and blue with an enclosed ladder for added safety. **S.R. Smith**, Canby, OR.

LED Pool/Spa Lights

Circle 136 on Reader Service Card

O'RYAN INDUSTRIES has introduced the PoolStar2500, a 12-volt lighting system with a durable plastic dry-niche housing and bright 72S LED technology. The units arrive self-contained, complete with UL-listed transformers and 70-foot cords, and fit 3-7/8-inch wall openings. Compact and easy to install, they're designed for use in pools, spas, rock features, waterfalls and fountains. **O'Ryan Industries**, Vancouver, WA.

Pool/Spa Catalog

Circle 137 on Reader Service Card

PENTAIR WATER POOL & SPA has released the 2006 Pentair Pool Products catalog, a 622-page book that contains product descriptions and ordering information for the company's complete line, including pumps, filters, heaters, cleaners, controls, lighting, white goods and more. Replacement parts are also listed, as is a guide to the company's training programs. **Pentair Water Pool & Spa**, Sanford, NC.

Digital Heat Pump

Circle 138 on Reader Service Card

AQUACAL has introduced digital versions of its IceBreaker heat pumps in both the HeatWave and AeroTemp lines. These devices, which use a titanium heating process to transfer ambient heat from the air to a pool in temperatures down to 32 degrees Fahrenheit (and can also be used to cool a pool's water), now have digital readouts and control panels that are easier to understand and operate. **AquaCal**, St. Petersburg, FL.

Composite Decking

Circle 139 on Reader Service Card

TREX manufactures composite decking, railing and landscape components. Deck planks come in 2 by 4 and 2 by 6 formats, and there are fascia and trim pieces as well as risers; railings and fence systems feature a number of profiles and styles; and landscape timbers and edging are available. The materials come with or without wood graining in a variety of colors in weathered and unweathered styles. **Trex**, Winchester, VA.

Pondless Streams

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FILTRIFIC offers the Vanishing Water system for pondless streams and waterfalls. All water in the system flows to a storage tank when the system isn't in use, reducing evaporation and water maintenance issues and allowing the designer to develop longer streams and bigger waterfalls. The system allows for easy access to pumps and hardware, and there's a filter basket to collect leaves and other debris. **Filtrific**, Woodinville, WA.

Mini Excavator

Circle 141 on Reader Service Card

DITCH WITCH offers the MX202 Mini Excavator. Designed for maximum versatility in tight spots, the product features full-circle operator's station rotation and a pivoting boom design, allowing for offset excavations adjacent to foundations and fences without a need to reposition the machine for depositing the soil. Large, unobstructed windows also give the operator great views of the work area. **Ditch Witch**, Perry, OK.

Continued on page 68

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4	National Pool Tile (pg. 7)	(888) 411-8453 www.nptgonline.com
62	Oase North America (pg. 20)	(800) 365-3880 www.oasepumps.com
127	Peacock Pavers (pg. 26)	(800) 264-2072 www.peacockpavers.com
107	Pebble Technology (pg. 23)	(800) 937-5058 www.pebbletec.com
101	Pentair Water Pool and Spa (pg. 11)	(800) 374-4300 www.pentairpool.com
	Pool Design Software (pg. 72)	(800) 772-6956 www.pooldesignsoftware.com
	PoolDesign.net (pg. 68)	(954) 941-1124 www.pooldesign.net
45	PoolFog (pg. 68)	(866) 766-5364 www.poolfog.com
66	Praher Valves (pg. 65)	(800) 461-4915 www.prahervalves.com
120	Recreonics (pg. 35)	(888) 428-7771 www.recreonics.com
51	Regal Plastics (pg. 73)	(800) 444-7755 www.regalplastics.com
	Restoration Specialists (pg. 72)	(877) 270-4872 www.restore-usa.com
72	Rock & Water Creations (pg. 13)	(866) 466-7625 www.rock-n-water.com
35	Spray Force Mfg. (pg. 14)	(800) 824-8490 www.sprayforce.com
42	Standard Bronze (pg. 70)	(201) 339-1351 www.standardbronzeco.com
52	Stegmeier (pg. 27)	(800) 382-5430 www.stegmeier.com
131	TXI Riverside Cement (pg. 71)	(909) 635-1800 www.txi.com
	Wall Whale-GABco Products (pg. 72)	(866) 888-8778 www.wallwhale.com
56	Waterway Plastics (pg. 2)	(805) 981-0262 www.waterwayplastics.com

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HOW GOOD DO YOU WANT TO BE?

Professional Drawing & Presentation School September 25-29, 2006

Scottsdale, Arizona

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

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

Developed at the request of pool professionals, landscape architects and graduates of Genesis 3's Level I and Level II schools, this dynamic program is based on professional-level drawing courses that David Tisherman taught at UCLA for 12 years. Cost (including accommodations, meals and all drawing materials and media): $6,300.

Applications are now being accepted. Visit our website for a complete course overview.

Pool & Watershape Construction School September 28-30, 2006

Scottsdale, Arizona
Program Cost: $2,250

In keeping with our mission of advancing education on a global level, we are pleased to offer yet another of our Genesis 3 Pool & Watershape Construction Schools as the latest component in our design-certification program. The school's curriculum covers plan review, excavation, layout, soil and drainage, steel placement, plumbing, utilities, gunite, tile and coping, decks and drainage, remote controls, automation, plaster and start-up – with top-flight tradespeople, designers and engineers from the industry as instructors. The school will be held at the Hyatt Regency Scottsdale Resort & Spa at Gainey Ranch. Program cost includes accommodations for three nights, meals and course materials.

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

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GENESIS 3 - THE INTERNATIONAL FORUM FOR CONTINUING EDUCATION FOR WATERSHAPE DESIGNERS

Decorative Fountains

Circle 142 on Reader Service Card

LITTLE GIANT offers the Classical Fountains line of decorative waterfeatures. The versatile, portable, self-contained units are designed to bring old-world charm to any setting, indoors or out, along with the sound of moving water. They are molded from polyethylene for durability and also feature integral planters that are set up in such a way that soil won't clog the fountain's pump. **Little Giant**, Oklahoma City, OK.

Pump/Filter Combination

Circle 143 on Reader Service Card

WATERWAY PLASTICS offers the Clearwater Cartridge II Filtration System, a complete package that includes the high-performance Supreme Pump and accessories along with the filter system. The joint packaging offers builders everything they need to get a pool system up and running, assuring them of matched components and performance as well as years of dependable service. **Waterway Plastics**, Oxnard, CA.

Modular Wood Decking

Circle 144 on Reader Service Card

ECO WOODS CALIFORNIA offers Eco Decking Tiles, a modular decking system made with Ipe, a durable wood from Bolivia. The modular units snap together without nails, screws or adhesives and resist damage caused by moisture, heat or frost. Modules come in linear or patterned formats in 25- or 30-millimeter thicknesses, and beveled edge and corner pieces are available. **Eco Woods California**, Reseda, CA.

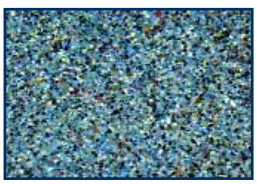
Curved Deck Drains

Circle 145 on Reader Service Card

QUAKER PLASTIC CORP. now offers a curved deck drain as part of its Water Hog line of 3-inch deck drains. Designed for use with freeform pools and decks and made of PVC, the curved drain comes complete with tops, base screws and connectors – all ready for installation. These drains handle water at high volume, making them ideal for creating clog-free deck drainage. **Quaker Plastic Corp.**, Mountville, PA.

Aggregate Stones

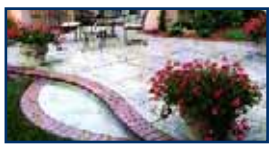
Circle 146 on Reader Service Card



3M offers Colorquartz Accent Stones that allow pool builders to add a unique, eye-catching luster to natural-pebble pool mixes and a variety of other applications. Designed to replace 20 to 30 percent of the chosen pebble mix, the ceramic-coated quartz product is available in four colors – pacific blue, cayman green, black and jade – and is made to withstand sunlight, harsh chemicals and acid washings. **3M**, St. Paul, MN.

Decorative Concrete

Circle 147 on Reader Service Card



ARCHITECTURAL CONCRETE DESIGN offers decorative-concrete fabrications that mimic a wide range of materials, including fieldstone, slate, brick, tile, cobbles and many other natural materials. The results are strong, durable and long-lasting, and the finished product requires virtually no maintenance. Complete design-consultation and installation services are available. **Architectural Concrete Design,** Levittown, PA.

Backflow Preventers

Circle 148 on Reader Service Card

WILKINS offers the 375A series of backflow preventers for large-scale applications. Available with 4-, 6- and 8-inch diameters, the devices consist of a pressure-differential relief valve positioned between two independently operating spring-loaded check valves. Made with lightweight epoxy-coated ductile iron, the assemblies are easy to install and feature a relief valve and four test cocks. **Wilkins**, Paso Robles, CA.

Waterfall Base

Circle 149 on Reader Service Card

REPLICATIONS UNLIMITED has developed a new base for its Hawaiian Waterfall feature that raises the existing artificial-rock waterfalls an additional two feet above ground level. Matching artificial deck rocks are also available to extend designs across the deck to complete a composition. The waterfalls are pre-plumbed for instant set-up and no installation training is required. **Replications Unlimited**, St. Louis, MO.

Continued on page 70

ATTENTION ALL READERS!

Many of you have asked why you need to fill out subscription cards if no information about your business has changed. Here's why:

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This is important, so take a minute once each year to complete one of the subscription card we include in every issue of the magazine and mail it to us. Thanks!

WATERSHAPES

Pond Water Treatment

Circle 150 on Reader Service Card

PACIFIC WATER GARDENS offers barley logs to assist in clarifying pond water. When placed in the water, the log becomes biologically active in 14 to 28 days and stays active for four to six months. Safe for fish, pets and plants, the product is applied at a rate of one log per each 100 square feet of surface area and works best when submerged at the pond's edge, near moving water. **Pacific Water Gardens**, Molalla, OR.

Plant-Information Resource

Circle 151 on Reader Service Card

HORTICOPIA offers Horticopia Professional (Version IV), a comprehensive software reference containing pictures and data for ornamental plants. Used by landscape professionals, arborists and growers, it is a digital reference tool for plant information and has significant applications in development of design proposals, plant care sheets for clients and handouts for employee training. **Horticopia**, Purcellville, VA.

Large Retaining-Wall Modules

Circle 152 on Reader Service Card

VERSA-LOK has introduced the Bronco retaining wall system. Ideal for grand-scale jobs with excavation constraints, the stainable concrete modules are finished with a natural-stone appearance. Each module weighs approximately 4,500 pounds and displays 14 square feet of face area – all the heft and coverage needed to build walls up to 10 feet tall without soil reinforcement or footings. **Versa-Lok**, Oakdale, MN.

Software Update

Circle 153 on Reader Service Card

NEMETSCHEK NORTH AMERICA has updated its VectorWorks software system to version 12.0.1 – a maintenance update for VectorWorks Designer, VectorWorks Architect, VectorWorks Landmark and other CAD systems. Free to VectorWorks 12 users, the update offers improvements to section views in perspective projections among many other upgrades. **Nemetschek North America**, Columbia, MD.

Stone Planters

Circle 154 on Reader Service Card

BIG BEND STONE imports hand-hewn stone planters known as tinajas from Mexico. Each individually crafted planter is quarried from volcanic tuff outcrops and has its own unique shape and character. Insulating for plants in winter and cooling through the summer, the naturally porous material darkens with age. In most climates, lichens and mosses will adhere to its outer surfaces. **Big Bend Stone**, Terlingua, TX.

Exterior Lighting

Circle 155 on Reader Service Card

ATOM LIGHTING offers an array of landscape lighting fixtures for use with xenon and halogen lamps. Designed for easy installation, simple maintenance of fixture mechanisms and reliable, long-term performance, the line includes directional, below-grade, pathway, architectural, suspended and submersible fixtures along with accessories, power supplies, lenses and cables and connectors. **Atom Lighting**, Scottsdale, AZ.

Paver Restraint

Circle 156 on Reader Service Card

PERMALOC offers StructurEdge, a brick- and paver-restraint system. Made from aluminum, the flexible, L-shaped product provides a clean, unobstructed edge that allows for the use of power trimmers directly adjacent to the hardscape. Quick and easy to install, the edging comes in gray or black and readily forms to curves and angles as well as straight runs while resisting cracking, rusting or rotting. **Permaloc**, Holland, MI.

Garden Ornaments

Circle 157 on Reader Service Card

GARDEN ART INTERNATIONAL has published a catalog on its line of imported pottery, statuary and fountains. The 32-page, full-color booklet covers Italian terra cotta, terrachino, custom-cast, concrete, Greek, Chinese and Vietnamese vases, planters and urns as well as wall and free-standing fountains and benches. It also has information on custom work and finishes. **Garden Art International**, Santa Ana, CA.

Continued on page 72

GATE ALARM

Circle 158 on Reader Service Card

TERRAPIN COMMUNICATIONS offers the Safety Turtle wireless gate alarm models GA-101 and GA-ML-101, with the latter adapted to the Magna-Latch fastening hardware. A base station in the house sounds an alarm if a child opens the gate, if the gate fails to latch within 11 seconds of adult entry or if a child wearing a Turtle wristband goes in the water. **Terrapin Communications**, Ottawa, Ontario, Canada.

MULTI-POOL CONTROL

Circle 159 on Reader Service Card

ADVANCED CONTROL LOGIX has introduced WebLogix, a wireless Internet-communications interface that allows for full wireless, bi-directional communication with the company's line of chemical controllers. The module allows chemical controllers to be viewed remotely and programmed via the Internet, with each device capable of communicating with up to four pools. **Advanced Control Logix**, Colfax, CA.

LED LANDSCAPE LIGHTS

Circle 160 on Reader Service Card

DABMAR has introduced a line of long-lasting, energy-efficient and innovative LED path, brick, rope and wall lighting fixtures. The model LV-LED7 lights generate no heat and consume from 70 to 90 percent less energy. In addition, the LEDs will last up to 11 or 12 years. Available in white, green, blue and red, the lights come in fixtures with a 2-3/4-inch diameter and run on a 12-volt system. **Dabmar**, Oxnard, CA.

GARDEN SCULPTURE

Circle 161 on Reader Service Card

TREVI has published a catalog on its line of fountains, planters and garden statuary. The 36-page, full-color brochure focuses mainly on fountains and includes designs inspired by cultures and civilizations from around the world, many updated with contemporary looks to complement modern architectural styles. All products are available in a variety of standard colors or with custom finishes. **Trevi**, Las Vegas, NV.

Hand-Held Cleaner

Circle 162 on Reader Service Card

WATER TECH offers the Catfish cleaner for use with small pools, spas and hot tubs. The hand-held/extended-reach device cleans every area (floors, walls, stairs and steps, drains, corners and in and around ladders) and is both lightweight and maintenance-free. It removes virtually all debris, including leaves, pine needles, sand, bugs, pollen, human and pet hair, pebbles, coins, twigs and acorns. **Water Tech**, East Brunswick, NJ.

Back-Pack Vibrator

Circle 163 on Reader Service Card

STOW CONSTRUCTION EQUIPMENT offers a new, lightweight, backpack vibrator. Ideal for efficient work in medium- to high-slump concrete applications (small pours, slabs, driveways, stem walls and footings), the model BO25H weighs just 24 pounds and allows the operator to carry the unit around the job site without the inconvenience of dragging electrical cords. **Stow Construction Equipment**, Carson, CA.

Pool-Product Catalog

Circle 164 on Reader Service Card

STA-RITE has published its 2006 catalog. The 472-page book contains product descriptions and ordering information for the company's complete and greatly expanded line of equipment for swimming pools and spas and includes many items carried over from Pentair, which owns Sta-Rite. Coverage includes the full range of basic equipment as well as maintenance products and replacement parts. **Sta-Rite**, Sanford, NC.

Multi-Filter Controller

Circle 165 on Reader Service Card

ACU-TROL has released the BW100 controller, a microprocessor-based device that can guide up to four filters through automated backwashing cycles and will automatically clean filters as well. The unit can backwash based on time of day or differential pressure, or it can be operated manually. There's also a manual-override option that allows the user to stop or start a backwash at any time. **Acu-Trol**, Auburn, CA.

By Mike Farley

Pretty as a Picture

Swimming pools and other watershapes make great subjects for photographers, which makes it logical that every year or two I've be able to amass a new collection of these books to review.

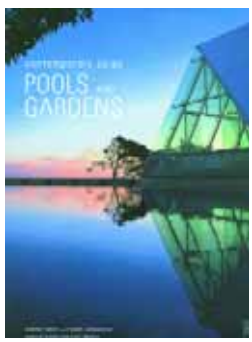
In general, publications such as these are all about pretty projects and are aimed mainly at consumers, but I've always found them useful as sources for design ideas and, in general, as a means of seeing what other people are doing. For the most part, however, these publications are not particularly "informative": Once you get past the pictures, there's really not much else there to build knowledge or advance the craft.

Such is the case with all four of the publications I'll cover here in a quick, round-up fashion. All are beautifully illustrated, and some display an interesting range when it comes to design approaches, materials and overall composition.

◗ *Hot Tubs and Spas* by Tina Skinner (Schiffer Publishing, 2003). This is one of several publications produced by the Master Pools Guild, an organization of pool and spa builders. In this volume, we see a comprehensive sampling of spa treatments – all manner of styles, materials and settings. There are contemporary looks, classic styling, natural-looking spas, some in conjunction with pools, others standing alone. There's no question that in working with a client who wants something interesting in a spa, this book would serve as a good point of departure for design discussions.

◗ *Pools, Patios and Fabulous Outdoor Living Spaces* by Tina Skinner (Schiffer Publishing, 2005). Another Master Pools Guild production, this volume highlights entire outdoor environments. There are all sorts of residential pools, spas and waterfeatures along with dining areas, fireplaces, patios, decks and associated gardens. What's nice about this collection is that it encompasses the full range of components in which clients are interested these days, from watershapes and outdoor rooms to casual-living spaces and interesting amenities.

◗ *Contemporary Asian Pools and Gardens* by Karina Zabichi and Chami Jotisalikorn (Priplus Editions, 2005). This is my favorite book in this round-up: When I saw it, I figured it would be heavy with Japanese and Chinese projects, so I was pleasantly surprised to see a sampling from all over the map of that part of the world, with projects from Bali, Thailand and Australia. The book is loaded with interesting photos of some quite unusual designs – things



we don't see much of in the states, including creative uses of wooden structures and glass ornamentation. All of these projects are located in tropical environs, and I found the designers' use of tropical plant material to be particularly interesting. Overall, it's a great look at how pools, spas and other watershapes are treated in a variety of Asian settings.

◗ *The Swimming Pool* by Martha Baker (Clarkson Potter Publishing, 2005). I'm not sure this one lives up to its definitive (and somewhat pretentious) title, although it does include a nice set of projects mostly from the northeastern corner of the United States along with a few from overseas. Baker breaks pools down into four categories – romantic, modern, classical and rustic – and offers good examples of each interspersed with small sections on sculpture, outdoor furnishings, garden structures and dining areas.

None of these books pretends to be anything more than a simple forum for the display of interesting work. If you're looking for a transforming reading experience, stay on the hunt. But if you're looking for ideas that can be transplanted into new projects, this quartet of picture books definitely fills the bill. WS

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

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