

Inside: Brian Van Bower on Working within Genres

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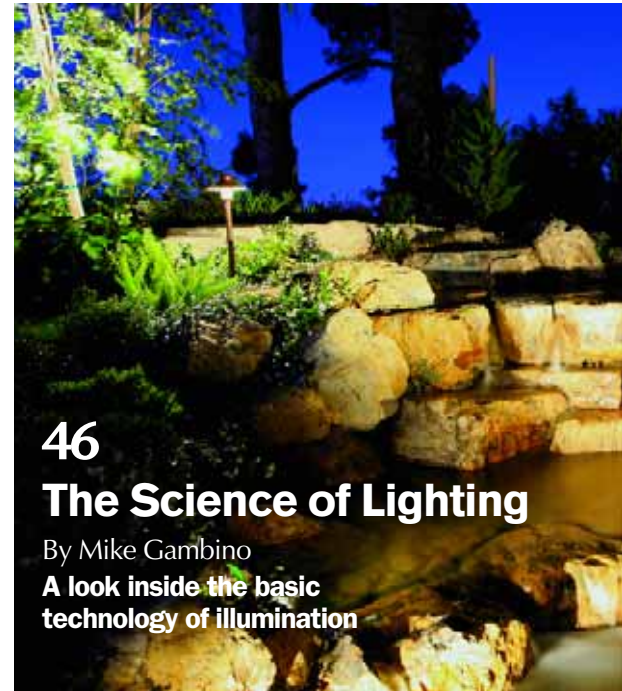
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features



36 Fluid Melodies

By Steve Mann
Making music with
'hands-on' fountains



46 The Science of Lighting

By Mike Gambino
A look inside the basic
technology of illumination



56 Shell Games

By James Atlas
Tracing the early stages of
an enormously artful project

columns



10



6 Structures

By Eric Herman

Mining the potential of visualization

10 Aqua Culture

By Brian Van Bower

'Signature looks' and moving beyond genres

18 On the Level

By Bruce Zaretsky

So is all that lawn really what you want?

26



26 Detail #85

By David Tisherman

Making decks and coping work together

78 Book Notes

By Mike Farley

Exploring the edges of artistic illusion

18



departments

8 In This Issue

72 Advertiser Index

72 Of Interest Index

74 Of Interest



On the cover:

Photo by Steve Mann, Fountains, Toronto, Ontario, Canada.

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By Eric Herman

Moving Toward Fruition

In my role as editor of *WaterShapes*, I'm often approached with tales of utterly amazing projects in the works – but still months or even years away from completion. That can be frustrating at times, because the only way to satisfy my piqued interest is to wait things out until the time finally arrives when we might get the privilege of covering the results in these pages.

These experiences in learning to master my impatience have gone a long way toward proving to me that anticipation can actually be a wonderful thing. This issue, for instance, carries a prime example of the way this waiting game can pay off in the form of James Altas' "Shell Games" (page 56), in which a Chicago-area builder begins two-part coverage of a project of mind-bending complexity and scope.

More than five years in the making, the project had been in the works for quite a while before I heard about it from my friend Nick Powell of Craig Bragdy Design (Denbigh, Wales). He visited our booth at a trade show and went off about this great installation with an indoor pool where a giant clamshell had been made to hang out over the water at one end. He told me that his firm, which makes fantastically colorful, textured ceramic tile, had been engaged to create an iridescent mother-of-pearl tile mosaic to finish the underside of the shell.

In the months following this conversation, reports of this project seemed to multiply as I began to hear from anyone and everyone who'd been involved with it on any level – and even from people who had simply heard about the crazy pool rigged out with the clamshell. As the project finally neared conclusion, Nick referred me to James Atlas, the watershaper who'd been asked to turn this flight of fancy into reality – and that's where the story began showing its full extent and complexity.

As James explains in his article, the clamshell is only part of the deal: the project was being done at the request of a woman who brought a huge stock of creativity to the task and was obviously accustomed to allowing her imagination to run wild. What's more, she had the vision and the wherewithal to indulge the most outrageous inklings and impulses.

In that sense, this is a project that, from start to finish and probably beyond, has been about the power of visualization: From the most elaborate of designs to the most modest, this ability to anticipate a result and use that anticipation to pursue just about any sort of imaginative concept is one to be greatly desired – a must for design professionals and also a helpful characteristic among clients.

That's not to say that just because someone can think of an ambitious idea that it necessarily can or should happen, but there can be no question that for a highly creative idea to become real as a watershape, a watershaper's clients must have some ability to visualize outcomes and subsequently grant themselves and those working on their behalf the freedom to follow those paths.

In this case, James describes a path that would test the limits of his technical capabilities – making this a story of the power of visualization as well as one of the dogged persistence required to make concepts come to life.

By extension, this is why anticipation can be so exciting: It's an agitated state of mind where the powers of inspiration and execution meet – and it goes a long way toward explaining why I have so much fun following along with all of you because I have no idea when or where the next wild idea might start on its path to fruition.

Eric Herman

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Steve Mann is an inventor, artist, musician, professor, scientist, engineer and the creator of the hydraulophone, a combination water-feature/musical instrument that uses water to generate sound. He currently teaches in the Department of Electrical & Computer Engineering at the University of Toronto and has written 139 research publications, two books and numerous articles. He also holds 51 patents, has been the keynote speaker at numerous scientific and industry symposia and conferences and has been a speaker at Distinguished Lecture Series and colloquia at more than 50 universities. Among his inventions in addition to the hydraulophone, he is considered by many to be the inventor of

WearComp (a wearable computer) and WearCam (an eye-tap camera and reality mediator). He carried his inventions and ideas to the Massachusetts Institute of Technology in 1991 and received his doctorate there in 1997. Among his many endeavors, he owns and operates Fountains, a company focused on creating hydraulophones for a range of applications and settings.

Mike Gambino owns and operates Gambino Landscape Lighting in Simi Valley, Calif. A graduate of Adelphi University with a bachelor's degree in business administration, he has been a California-licensed landscape contractor since 1990. In 1995, he began spe-



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cializing in high-performance low-voltage landscape lighting systems designed and built to last. For more information, visit his web site: www.gambinolighting.com.

James Atlas is co-principle of Platinum Pool Care Aquatech, a full-service pool design, construction and service firm serving upscale residential clients in the greater Chicago area from a base in Wheeling, Ill. The son of widely known pool builder and industry pioneer Ron Atlas, James has been involved in the pool-construction business since childhood. He attended the University of Colorado at Boulder, graduating with a bachelors degree from the business school in 1991.

He worked as an options trader at the Chicago Board of Exchange for three years before re-joining the pool industry in 1994. After that, he soon applied his entrepreneurial skills to form Fountain Technology, a firm focused on commercial waterfeatures, and Pool Watch, a commercial pool maintenance/aquatic services company. He eventually rejoined his father's firm and worked as an estimator for large commercial projects. Recognizing a void in the area's custom pool design/construction market, he formed Platinum Aquatech in 2003 to serve upscale residential clients and merged it with another firm, Pool Care Specialty, in January 2008.



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By Brian Van Bower

Finding Touchstones



Many great artists are best known for working in identifiable genres, styles or modes or with specific materials, themes or some other defining detail. From Picasso's cubist abstractions to Mozart's cascading melodies or Rodin's bronzes to Frank Gehry's sweeping architectural forms, geniuses of all stripes are in one way or another known for qualities that are distinctly *theirs*.

The same holds true for many watershapers, especially those working at the top of the field. While many of us (myself included) cross the lines that divide distinctive modes, styles and genres, even the most free-spirited among us can be identified by elements that, for want of a better term, might be called the touchstones of our work.

This principle of identification isn't absolute (from time to time we all play against type and do something out of the ordinary), but when I consider ways in which up-and-coming watershapers can elevate their work, I have the sense that mastering a particular element of watershape expression is one way to step up and gain a reputation for excellence.

boiling water

I raise this point largely to set up my response to a recent inquiry from an aspiring watershaper who asked me what he needed to do to break into the

Even the most free-spirited watershapers can be identified by elements that, for want of a better term, might be called the touchstones of our work.

upper ranks of the business. (In one form or another, this is probably the question I'm asked more often than any other.)

The answer is, of course, all-encompassing and would take a lifetime of conversations or columns to address adequately – and I always begin by making just that statement. I also usually point out that my response to the question has changed through the years as my career has developed and my basic sense of what's possible in watershaping has exponentially expanded.

With that as prologue, I move along by breaking the topic down into two specific points: First, you can't achieve much in any field of creative endeavor without having mastered the basics. If you want to be a chef, for example, you first have to know how to boil water and crack eggs.

In watershaping terms, that means you need a working familiarity with and appreciation of (if not outright expertise in) soils and geology, construction techniques, details of workmanship, hydraulics, design history, materials selection, design principles, presentation techniques, customer relations, project management, water-quality management and about a thousand other subcategories that line up under those headings.

Watershaping, in other words, encompasses a truly vast body of knowledge – so vast, in fact, that comfort with the fundamentals requires a long-term commitment to education, the acquisition and constant updating of technical knowledge and ongoing development of design acumen.

As I see it, those who aspire to excellence in watershaping in today's marketplace can't get by on charm or finesse. Many of today's consumers are too sharp to be taken in by bluster that isn't backed by performance and too sophisticated in their own tastes to be persuaded to accept less than they're expecting in a design.

Continued on page 12

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Indeed, even production- or volume-oriented watershapers these days are having to step up and do better with the fundamentals. It might cost them more to toe the line (which is why they avoided stepping up in the first place), but today's consumers are pretty good at punishing poor performers and forcing them to elevate their games as a

matter of survival.

For aspirants to excellence, however, there is no latitude: If you want to play the game on a high level, there's no alternative to mastering the fundamentals.

reaching higher

For most of us who strive for or who have reached the upper echelon, staying

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in the mid-range or having a production orientation isn't an option. We want to do something special in our work, which leads me to the second point I offer in answering the basic question of how one can elevate his or her watershaping to an art form: You have to be able to execute design elements that make projects special.

Often, that distinction is best achieved by choosing a specialty for which you might become known. There are a variety of ways you can make this happen, but it always starts with being deliberate in your thinking and carefully considering your place in the watershaping world. Yes, it can happen by chance, but luck is never going to be as reliable as is moving in a chosen direction with a plan and a sense of purpose.

Using my own career path as an example, my gateway into the world of custom watershaping started with what were once commonly called "lagoon pools." Working in south Florida early in my career, I saw that there was a demand for watershapes that reflected the sunny lifestyle that defines the region. I also recognized that almost nobody in the industry was deliberately exploring that genre in design terms, so I stepped directly into the niche – and it worked.

It was so effective that for several years, I was known around the area as the "lagoon guy."

In those times, I built lots of freeform pools with dark, highly reflective surfaces, surrounded them with lush landscaping, minimized attached architectural deckwork, set up rambling garden pathways and installed thatched huts, wooden decks, waterfalls and a host of other tropically inspired details. Even though some of those pools were built almost 30 years ago, I'm still proud of many of them and take satisfaction knowing that they've provided years of pleasure, relaxation and

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fun for my clients.

In my case, I decided to move beyond the limitations of that genre and have since developed designs that cut a far wider swath in terms of styles, motifs and design sensibilities. Just the same, the lagoon pool will always represent the starting place from which my career as a custom watershaper truly began.

styles and features

The fact that someone may choose to move beyond a given genre doesn't undercut the value of being identified with one style or another. Indeed, I've known many watershapers who are multi-faceted but are nonetheless proud to be identified as specialists in a given design tradition.

One example is Mark Holden, a regu-

lar *WaterShapes* contributor and an instructor for the Genesis 3 program. Mark is a knowledgeable, talented professional who has designed and built projects across a wide range of styles, but he may be best known for his work in the Spanish Colonial style at vintage homes in southern California. He has mastered the elements of this look down to the finest details and his work in such projects is genuinely remarkable.

Then there's Randy Beard, another *WaterShapes* regular and Genesis 3 participant. I'm not certain he would claim this identification, but he has executed some of the finest contemporary-style pools I've ever seen, including a great project designed by former *WaterShapes* columnist Stephanie Rose in which a modernist sculpture rises above a large perimeter-overflow pool in the courtyard of a stylish home. He's another watershaper with broad capabilities, but he could quite reasonably lay claim to mastery of this particular idiom.

I could name scores of other watershapers who have clearly mastered particular styles, and in most cases it's safe to say that their familiarity with given genres frees them up to add marks of distinction to what they do, whether the work is nominally Southwestern, Moorish, Greco-Roman, Contemporary, Spanish Colonial, or Ultra-Modern. My point is, getting a well-deserved reputation for excellence in a single style that's popular among upscale clients is a wonderful approach to gaining more general acceptance for your work.

Equally potent is doing what many watershapers have done in recent years – that is, they've become identified with a particular feature or design element. One of the best examples to consider along those lines is my Genesis 3 partner Skip Phillips, who may well be the world's most recognized authority on water-in-transit systems.

Skip didn't invent the vanishing edge or the perimeter overflow, but he is on a very short list of watershapers who embraced them early on and have advanced these features to the point where they may be the most identifiable and popular of all watershape-design elements. Certainly, not every pool Skip

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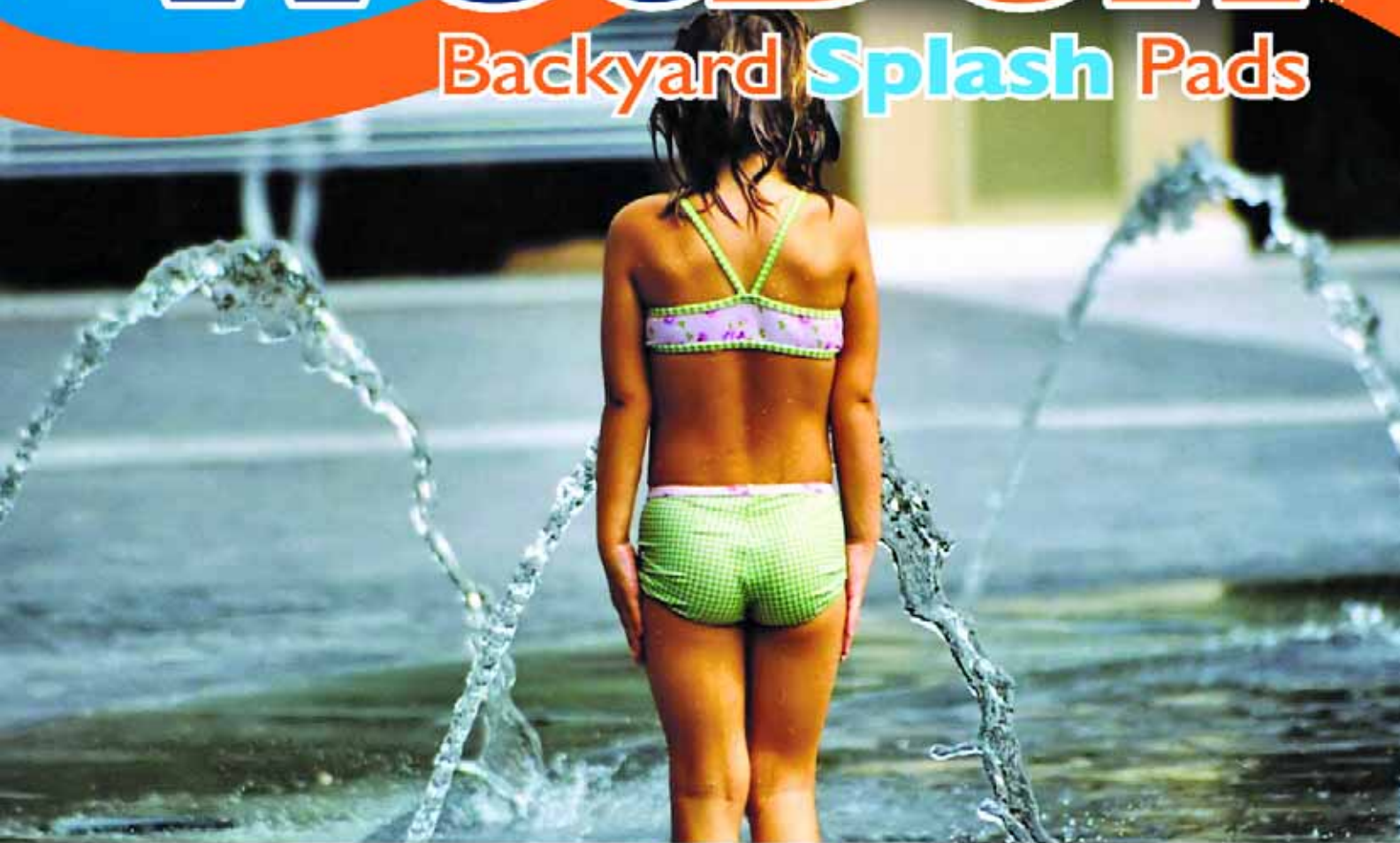
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builds includes water in transit, but enough of them do that he's become a genuine guru when it comes to making water flow over edges.

a universe of options

I'm lucky in the work I do both in my own business and through Genesis 3 that I've gotten to know professionals all across the country (and indeed around the world) who do amazing things with their watershapes.

Consider Kevin Ruddy, a Genesis 3 alumnus who has mastered the art of building indoor residential pools. His work covers a broad range of architectural styles and features, but his mark of distinction is doing it all indoors. And of course there's David Tisherman, who by now needs no introduction. His work crosses all design styles and temperaments, but in watershaping terms he's clearly associated with raising pools out of the ground, with executing difficult hillside installations, with beautiful ma-

terials and with using simple forms in fantastically expressive ways.

The range of possibilities for specialization is almost limitless. You could, for example, become known for combining fountain features with swimming pools or for using elaborate rockwork or for developing dazzling dining/entertainment areas. You might also work with a specific type of material (much as Tisherman is renowned for his masterful use of glass tile) or for an unusual look, such as the deployment of fire features in conjunction with watershapes.

That very last example leads me to an important point: When you move in a particular direction, you might do so in response to a trend – and certainly fire effects and outdoor kitchens qualify along those lines. The key is finding a trend that makes sense and has legs that can carry you into the future no matter what changes you might make or turns you might take as your career unfolds.

As for today's emerging trends, I know that many watershapers are now earnest-

ly exploring concepts related to environmentally sensitive design. This is a significant movement in more ways than one, not least of which is the fact that it represents a specialty based not on product types or details but instead on a value system.

We know that all things "green" are on people's minds lately, and for lots of smart reasons these possibilities are capturing imaginations as never before. I think this trend has definite staying power, and my suspicion is that there will soon be a class of watershapers who will be well known for their environmentally friendly designs.

In fact, we're already seeing this in a big way in the world of landscape architecture and design, where "sustainability" is a topic that dominates the field. Trust me: I don't think watershaping will lag too far behind.

the big deal

The beauty of watershaping as an art form is that it reaches into so many different potential specialties. It's a field rich with

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possibilities, and the only limit is the imagination of watershapers who are willing to step up and become true innovators.

Within all watershaping fields – ponds and streams, pools and spas, fountains and architectural features, tranquility and meditation gardens, competition pools, interactive water systems, even bird baths and zoological exhibits – there are always categories within categories, sub-genres within genres, and each can provide marks of distinction to those who master them.

None of us needs to feel compelled to master every one of those possibilities; who would have that much time?

new tricks

As discussed in the accompany text, the world of watershaping is characterized by a broad range of styles and features that make projects special – *and* define the work of watershapers who master given areas of specialization. One of the things that's so amazing to me is that there always seems to be a new wrinkle on the horizon.

As I was preparing this column, for instance, a client asked me to explore the possibility of designing a system in which a sheet of water falling from a spa elevated several feet above a pool could be used as a sort of liquid screen onto which movies could be projected. I'm not kidding: This client is dead serious about wanting to watch movies on a waterfall.

It doesn't happen very often, but this request stumped me. I've heard of images being projected onto precisely controlled banks of fine mist, but onto a sheer sheet of water? That one is miles beyond my established bag of tricks.

Aside from the fact that I'd love to hear from any reader who knows how this might be done, I bring up this example here because it's just one more indication of how rapidly the realm of watershaping is expanding into areas that would have been beyond anyone's wildest dreams even a few years ago.

Who knows? Someday a few of you might make names for yourselves as pioneers in "aquavideo"!

–B.VB

But whatever specialty or signature you choose, the big point here is that there's power in being deliberate in setting your course: Once you set your direction and begin gathering the education and information you need to follow your chosen path, you never know how far you'll go, how high you'll climb or where else your steps might lead you. **WS**

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

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By Bruce Zaretsky

Beyond the Lawn



Last month, I discussed the benefits of sustainability and its place in landscape and watershape design. As I hope I conveyed, I think it is incumbent upon us as professionals to be responsible for our actions and constantly aware of the effects our work has on the environment, now and in the future.

With the current severe drought desiccating the southeast, ongoing water problems in the west and increasing pressure on the water-supply infrastructure nationwide, it's more important than ever that we practice our professions wisely. This is why I am always trying to find ways to convince my clients that the all-American patch of lawn is one of the worst offenders when it comes to sustainable design.

Yes, much has been written in defense of lawns: They help remove pollutants from the atmosphere, provide local cooling effects, help reduce water runoff and serve as playgrounds for children, sporting events and entertaining. But in my book those advantages are outweighed in many cases by the fact that lawns also gobble up huge amounts of resources (including water and fuel) and contribute to pollution resulting from the use of gas-powered mowers and various fertilizers.

So how would I replace this icon of American suburbia? The answer, as always, involves thinking outside the proverbial box and engaging in a bit of responsible design.

alternative thinking

I've done what I can to educate and enlighten my clients about the lawn issue for years. Usually, it comes up when we discuss irrigation systems and

With the increasing pressure on the water-supply infrastructure nationwide, I am always trying to convince my clients that the all-American patch of lawn is one of the worst offenders when it comes to sustainable design.

what it takes to maintain the large expanses of close-cropped greenery so many of them want to keep as green as the fairways at the local country club.

Now that the water crisis has become better known and has reached the point where most of us are aware of how dire the situation is, clients have become more receptive to our reservations and are reconsidering their lawns. Often, they're willing to scale them back, but in some cases, they're open to eliminating them completely – even in cases in which water shortages aren't a direct issue for them.

As a case in point, let's look at a project that began as a perfectly normal call from a potential client that turned into the talk of the town.

That call came from someone who'd purchased a five-year-old, hilltop home in an exclusive private community. The neighborhood includes about 20 homes on varying-sized lots and backs up on a large wooded area protected by conservation easements and Department of Environmental Conservation regulations. Any work to be done on site had to be presented to the local town board for a variance; without such a variance, nothing at all could be done.

As is so often the case these days, the architecture of the house is a conglomeration of ideas inspired by various styles. From the street, for example, it has many features of a Cape Cod, with dormer windows and a porch as dominant features. But the columns holding up the porch have details reminiscent of a Colonial, while the back of the house, to quote one of the clients, looked like a "two-story double-wide trailer."

When I design, I always start by taking three major factors into account: architectural style, the clients' wishes and what falls out of my head. Of the three, the architecture is almost the most

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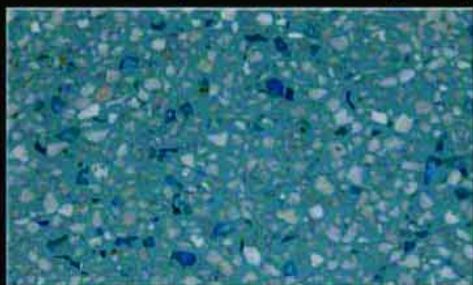
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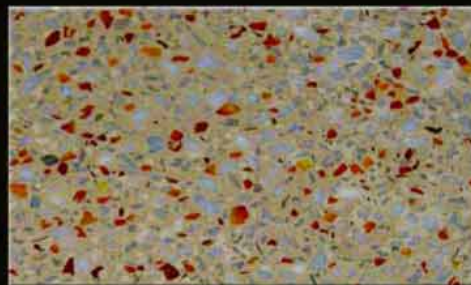
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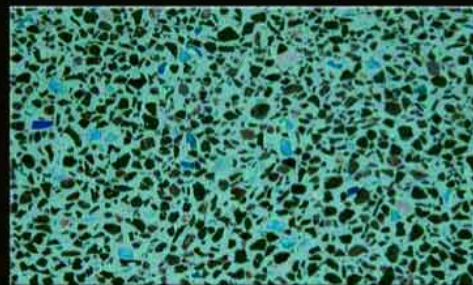
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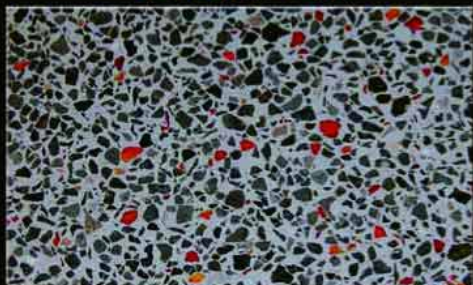
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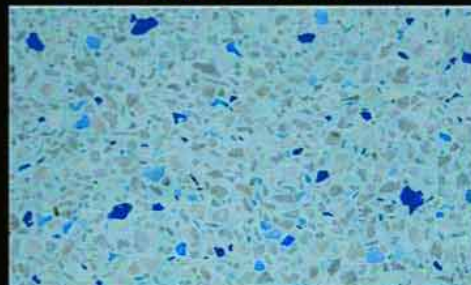
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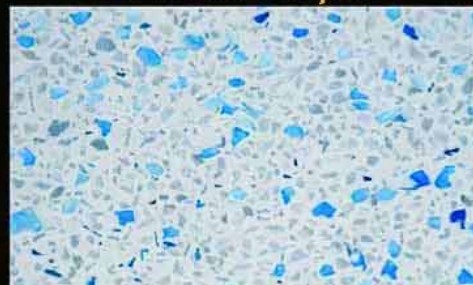
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significant point of departure for my design thinking: I use it as my guide unless the clients' desires dictate otherwise.

In this case, there was no dominant architectural feature or theme to latch onto or match, so I felt a good bit of freedom to pursue the clients' wishes and see whatever might fall out of my head in the process.

finding a style

The home in question had been the original model for the entire development, so the landscape had been something of a we-need-to-install-some-landscaping-for-the-model-to-make-it-look-expensive-but-we-don't-want-to-spend-a-lot-of-money-doing-it situation. In my experience, developers don't invest much

in the landscapes of these homes and instead drop in some plants and walkways on the cheap – as though landscaping were no more than a necessary evil.

The results of that effort in this case was an uninspired foundation planting, a walkway made of inexpensive concrete pavers and a smallish Trex deck off the back of the house. To their credit, however, the developers also planted a few red maples out front and a couple of large evergreens in the rear, mainly to provide privacy from neighboring properties.

Right off the back of the house, the grade dropped about eight feet to a lower level patio and from there reached across the abovementioned conservation easement. This wooded area continued downslope to a 100-foot-deep ravine and featured some fairly impressive and well-established maples and oaks along with a variety of native plants.

The installed landscape near the house, however, had little going for it – the cookie-cutter design typical of subdivisions everywhere. Compounding the problem was the fact that the original purchasers of these homes hadn't upgraded the provided landscapes, nor had any of them done much to take advantage of the sites' wooded, amply contoured features. These were upscale homes, but nobody seemed inclined to treat them that way.

Our clients, however, were newly arrived in New York from their home in Colorado, and we soon learned that they'd both grown up in the Canadian Rockies. They spoke so wistfully of mountainous terrains and the visual drama of lakes, waterfalls and alpine plants that it didn't take much for us to figure out what would make them happy.

She was particularly communicative on what she missed about living in Colorado, noting in the pre-meeting questionnaire we'd sent them that she loved the large fields of daisies and other alpine wildflowers she'd grown up with.

With cues that clear, it didn't take much to get the creative fires burning

into the trees

While I was on site with them, however, I held back just a bit: I usually try to give clients some idea of what I'm thinking – perhaps mentioning my thoughts about



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using a particular material or addressing a specific grade change – but I always like to hold a few things in reserve so we can surprise them in presenting our ideas.

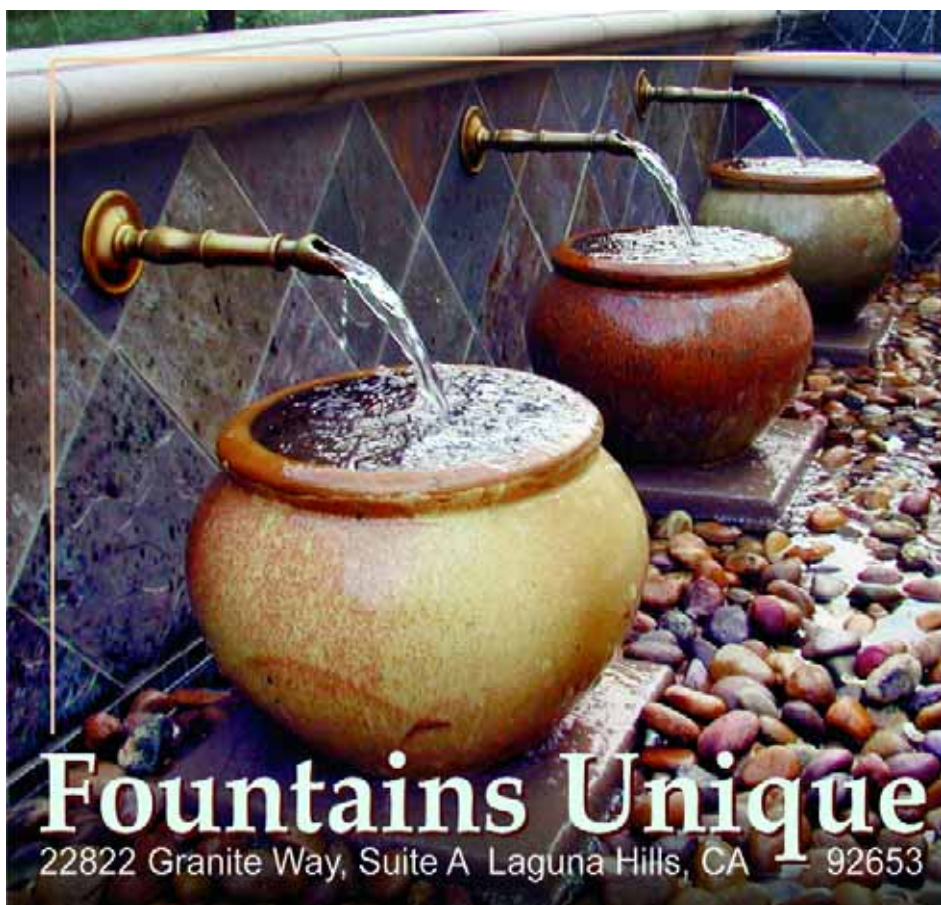
In this case, one of the surprises was our plan to convert the existing front lawn into a mountain meadow planted with an endless wash of daisies. As I saw it, this was an access point to my usual discussion about sustainable design – a perfect opportunity, in fact, because the repurposing of the lawn area would carry both of them back to their happy childhoods. Even during our initial meeting, this lawn-free front yard was a fixed part of the design forming in my mind.

The clients' responses to the questionnaire also indicated that they wanted some sort of watershed to be included in the overall design. With the slope out back, it seemed a no-brainer to work up a dramatic waterfall, but the problem was that it would need to fall away from the house and down the slope, so they wouldn't be able to see it easily from inside the house.

This problem was solved when we walked out onto the existing deck and the husband



The home had been the model for the entire development, and only minimal attention had been paid to its landscaping. There were a few nice trees out front, but beyond that there was nothing more than an unimaginative foundation planting and a broad expanse of lawn.



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made a derogatory comment about it.


The deck was an uninspired 20-by-14-foot rectangle with a staircase leading down to a lower-level patio in a straight shot – 15 risers with no landings or turns. It was long enough to make it seem like a never-ending staircase and did absolutely nothing to invite anyone to use it.

Standing on that deck, I had an overwhelming desire to reach out and touch the trees, but they were a good 20 feet away. If you approached the steps, you looked down onto a small swath of grass and then down the slope and into the ravine. My immediate thought was to extend the deck out over the slope, essentially putting it into the trees to make those standing on the deck feel as though they were in a forest.

This deck extension would be a number of steps down from the original deck's height, thus creating a multilevel space and setting up the lower deck as an intermediary between the top deck and the patio space below. Also, this lower deck would cantilever out over a pond we would build as the terminus of the water-





The scene out back was just as uninspired – this time without even the break of a foundation planting up against a home that the homeowner described as having the look of a 'two-story, double-wide trailer.' The deck was small and awkward, there was too much lawn and the design did nothing to exploit the beauty of the trees just beyond the ravine.




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on the level

falls we'd install. This platform would be the perfect viewing spot for the water-shapes and would also, to address the theme of sustainability, eliminate the lawn.

taking shape

This program left us with one last concern – that is, the view from the lower patio back up to the house, where the prospect was dominated by the slope and the underside of the original deck.

It wasn't a pretty picture: The dense shade precluded growth of most plants, so it was essentially a dirt incline that was slowly washing down into a small planter box that had been built between the underside of the deck and the lower-level patio. I asked the clients what their vision was for this area, and their response was quite direct: "You're the designer. *You* figure it out!" – and I already had.

What made this project wonderful were two things: First, the site incorporated some challenges, none too overwhelming to solve in terms of either design or budget. (While the clients had given me a bud-

get, their body language assured me that there was some flexibility so long as I came up with ideas that made them happy.)

Second (and more important), this project involved clients who gave me freedom to design with no micromanagement: They made it perfectly clear that they expected a top-quality design and top-quality installation. All I had to do was present them with a plan of action and move along. **WS**

Next, we'll take a close look at the project in words and images.

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

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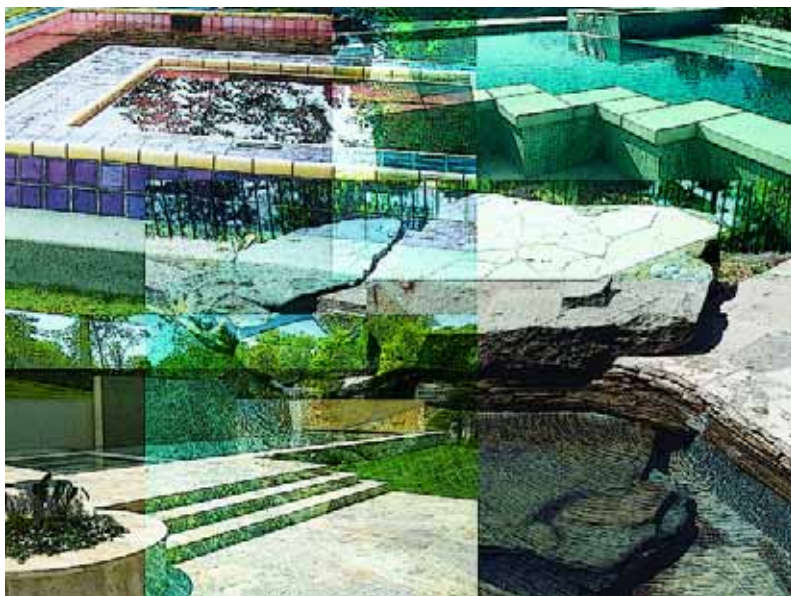
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By David Tisherman

On the Verge



For the past year and more, we've worked our way step by step through the many processes involved in designing and installing quality residential watershapes, starting from the first contact with a prospective client and working our way through, in the last two months, to the application of well-selected interior finishes.

A concern I've always had with this step-wise approach is that it makes too many of these operations seem as though they happen in isolation and that decisions about design and materials and finishing touches are made as the process unfolds. Nothing could be further from the truth.

Take the subjects of this month's column – coping and decking – as prime examples: Although we've finally reached the practicalities of these topics more than a year after we started this sequence of columns, I must point out that decisions about how they will be treated are properly made in the initial design stage, not at the tag end of things.

With that fundamental point in mind, let's dig in and take a look at some of my favorite options when these finishing touches are applied as long-planned construction activities whose time has finally come.

combined forces

In discussing coping and decking, I invariably combine them because, in my view, they are truly inseparable: For a design to succeed, both must work

For a design to succeed, coping and decking must work together because they play such important roles in defining the ultimate 'look' of a watershape.

together because they play such important roles in defining the ultimate "look" of a watershape.

Moreover, success is defined by the watershaper's appreciation of what goes into working with both when it comes to sorting out a huge variety of available options. In simple practical terms, different approaches and treatments require very different types of engineering and construction, and the choices you make have a substantial influence not only on the expertise you'll need to bring to bear, but also on the project budget.

Finally, I combine the two because it is so often a tendency in the pool industry to separate them, with a pool builder often working up to the coping and then turning the project over to a decking contractor to take care of the rest. This is, I think, a huge mistake when and where things are still done that way: It almost inevitably leads us to ill-designed abominations that are still with us because they've become "traditional" – a word I've mistrusted throughout my career.

The traditional look, in which a band of precast bullnose coping smacks up against a brick, stone or concrete slab of deck, is so common that it seems at times to be the only way people think these things can be done. Again, although it is common practice, nothing could be less acceptable in basic design terms.

From my perspective, in fact, it's fair to say that the traditional approach is the antithesis of what should be done: The last thing you want as a designer is to call attention to the shape of the pool and create an awkward visual transition that doesn't weave together any of the key visual elements.

I suppose, of course, if your aim is to build a pool that looks as though it's 50 years old, then the traditional approach might work. For any other situation, there are *far* better options. In fact, there are so many options that I won't even

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attempt to discuss them all here.

Also in point of fact, these decisions about coping and decking are *important*, mainly because most residential pools stand relatively close to the home. This visual proximity typically requires that there be linkages among the architecture of the home, the look of the watershape and the details of the surrounding space. By selecting appropriately from a hefty palette of design possibilities, you can play the weaver and effectively unite all these spaces as a tapestry in which everything works together.

When you limit those choices to the traditional or familiar, however, that sense of integration becomes elusive at best – and impossible to attain in too many cases.

making choices

In general terms, you can break approaches to the coping/decking decision down into two distinct categories: Either you want the watershape to blend seamlessly with its surroundings, in which case



I generally approach coping and decking as a single visual element in an effort to make watershapes flow seamlessly from the pool's interior and out into the surrounding space. Here, for example, the soft green interior finish transitions to a blend of green-tinged waterline tile and on to a pale green poured-in-place coping treatment. Everything works together, including the decking material and the plant material both in the background and in the distant views.

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the coping and deck material should be the same; or you're creating a watershape that is to stand out as a separate artistic statement, in which case your options explode and literally number in the hundreds.

This is one of the many reasons I always say that, from the very beginning of the design process, you need to understand which type of design you're trying to achieve!


The first of the two approaches listed above is more conservative and is probably applicable in most situations—that is, when you want the pool to blend into a setting rather than stand out within it. The second allows you to be far more creative, but the issues involved in a successful design are far more intricate, detailed and complicated.

In this realm of the stand-alone statement, for instance, one tiny change in color, texture or material can affect 20 other details (and each of those dozens more), so everything must be thought out, anticipated, interrelated and mastered to make the artistic statement work coherently. (This is, incidentally, another area where




Decisions about coping and decking are particularly important when a watershape is positioned near the home. In this case, the strong colors of the architecture freed me to use bold, vivid colors at the water's edge, with everything harmonizing visually across a distinctly colorful space.

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on-site supervision is critical if everything is to come together the way it must if the desired visual effects are to be achieved.)

Let's consider a typical freeform pool of the more conservative type. In most situations (although not all), these are watershapes for which there shouldn't be any visual division between the water's edge and the surrounding deck surface. In these designs, in other words, you never want to create a distinct visual band around the pool's edge with either the waterline tile or the coping because it will destroy any sense of visual flow or continuity.

Too often, however, the use of the popular modular copings causes just this sort of visual break. And often, these materials are used with freeform pools despite the basic fact that their contours can make use of these materials impractical: The need to make cuts and create pie shapes to cover radiuses often outweighs the convenience that led to the choice of these materials in the first place.

On that score, modular materials are



The naturalistic appearance of this watershape is considerably enhanced by the way the stone decking material flows down into the pool – a continuity of color, texture and line further enhanced by the presence of large stone pieces around the edges and under the water's surface.

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great when used around rectilinear watershapes because they fit – especially if you take the care to consider their size and the desired sizes of grout joints in setting dimensions for the structure. But still, these materials must be considered in the overall design scheme, and too often I think it's a case where convenience overwhelms artistry and leads to some choices and bands that are disruptive in visual terms.

Again, from a design standpoint, you need to decide whether you're banding the pool to make some type of artistic statement (let the designer beware, because this is extremely hard to pull off and usually leads to ugliness and visual failure) or should instead seek to blend the coping material with the surrounding deck material. In too many cases I've seen, that point isn't considered and the results can be jarring.

design details

Enough about the sins of traditional or convenient approaches: Let's get down to some solutions that really work in artistic, visual ways.

Natural stone, for example, is a wonderful material to use in edging freeform pools, because you can bring it to the edge with no visual separation from the surrounding deck and can thereby create a pond-like, more naturalistic appearance. In these situations, the irregular shapes and thicknesses of the material may pose installation issues; that's something I accommodate at the planning stage by making the bond beam a little wider than usual to allow for placement of the mastic joint at a farther remove from the water (thus making it easier to conceal). I also allow depth for a deeper mortar bed to simplify the process of blending the coping stones placed atop the beam with material on the surrounding deck.

Of course, using stone in this context forces you to consider something that is not an issue with standard modular material: That is, you have the question of the back edge of the material and the way it interfaces with the decking, the landscape or other hardscape structures beyond the beam. Again, there are numerous options ranging from the intricate (often with special stone effects) to the relatively simple (by pouring concrete).

Another option with freeform pools – and one I particularly love – is the use of some sort of poured-in-place-concrete coping that conforms readily to the shell's contours. More on this below, but now let's back up for a second and consider such choices from a more refined design perspective.

The front-edge thickness of the coping

or other edge material and how it's finished will have a distinct influence the way people perceive a watershape (and on how they step down into it, given the difference it can make in how big a step down they must take to get into the water). If, for instance, you choose a stone detail that is three or four inches thick, that can be a wonderful choice for pools that are meant

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to appear natural and blend with their surroundings – and it works well with contemporary designs as well. By contrast, you might go with a dramatic pre-cast or poured-in-place treatment to add visual weight.

That seems straightforward, but if the watershape is small or otherwise “light” in terms of visual weight, a thick, dramatic coping treatment on either the naturalistic or the architectural watershape may (or may not) be out of balance. Conversely with a larger watershape, a thin, cantilevered-stone edge might just seem too light.

And then you need to consider whether the waterside edge of the coping is to have a bullnose, how it will relate to the waterline tile, whether you want it to stand out far enough that it creates a strong shadow line. I devoted a whole column to approaches to vertical surfacing in November 2006, and the list of considerations could go on for pages, with everything depending on the situation, the visual needs of the design and the project’s budget.

These balances, of course, are all intricately interrelated, which is yet another reason why design education is so important. Without such a background, the process becomes a guessing game rather than a polished, visual approach to building. Besides, nobody ever said good design doesn’t involve lots of choices and decisions.

refining approaches

Although the decisions are complex when looked at in isolation, they will certainly fall into place more easily if you’re aware of certain key principles architects, artists and designers have been applying for centuries.

I’ve discussed all of these principles before, but when it comes to thinking about the edges of watershapes, *visual weight* is an extraordinarily important concept that has much to do with how elements in a visual space balance and work with one another.

This is incredibly important, for instance, in working with a raised wall on one side of a pool. In most situations, raised walls serve as a useful means of integrating a watershape with sloping topography beyond. A problem I frequently see, however, occurs when the face of the wall is finished with the same tile used at the waterline or, less often,



There’s no need to think of walls as monolithic monsters: By breaking them into planes and staggering the depth of the resulting panels relative to one another, you can create dynamic visual backdrops for watershapes – and canvases for a subtly dancing lightshow after dark.

the weight of water

As discussed in the accompanying text, managing transitions between the water and edges, decks and raised walls comes down heavily on the need to understand visual weight.

In that context, one of my pet peeves in wall treatments is the overuse of linear spillways that send long, sheer streams of water pouring into a pool. For whatever reason, this has become extremely popular; unfortunately, it has also contributed immensely to the uglification of lots of backyards. It’s almost as if these lines of sheeting water are installed simply because they can be – no other reason given.

The problem is that this effect all too often throws things out of visual balance: Not only does it draw undue attention to the wall, which is likely overpowering enough all on its own with its expanse of tile or stacked stone, but it also creates excessive turbulence in the water (disrupting the reflective qualities of the surface) and makes far too much noise, thereby destroying the tranquility of the space with a sound not unlike that of a flushing toilet.

Then there’s the fact that these falls tend to be installed right at the top of their walls, which only intensifies the problems.

Again, this is an issue of scale and visual weight. This is why, when I do install such effects, I prefer to break the long streams into smaller segments or use scalloped edges on the spillway to lend texture to the flow. And always, *always*, I make sure the streams are proportionate to their surroundings, which in most cases means making them mere fractions of the size of those I see on walls with typical wall-mounted waterfall effects.

In my book, watershape design at its best has little to do with riffling through catalogs to assemble arrays of off-the-shelf products. Instead of being bound by what’s available, good design is about understanding the specifics of the situation and responding with creative, even innovative solutions. If that means inventing something nobody’s ever seen before to meet a need, then so be it!

– D.T.

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with some sort of ledgerstone detail. In both cases, these fields of material carry far too much visual weight and can throw a composition hopelessly out of balance.

In and of themselves, the tile or ledger materials may be expensive or beautiful, but when they rise above the waterline by more than 18 inches or so, they create a *massive* visual field: It's all the eye sees, and it rivets attention in a way that simply should not happen.

There are, of course, exceptions, as when the wall is covered with a bold mosaic composition – a key artistic statement in almost every instance. For me, however, a better (and far less common) approach involves applying plaster on the wall above the waterline tile with a color and texture that blends with the pool's interior as well as the decking material. When you take this tack, the wall isn't so heavily weighted – and it becomes quite inviting if you allow plant material to drape over it and dangle down toward the water.

Also, there's nothing that says raised

walls holding back slopes beyond water-shapes need to be perfectly linear, either vertically or horizontally. I like to stagger walls in and out as panels, thereby breaking up the solid planes, creating visual interest and adding dramatic shadow lines. (In these cases, the walls become artworks on their own after dark, when shifting light from underwater lights plays across their surfaces.) I also like designs in which small walls are established at water's edge, then there's a step back to a second tier of walls that does the bulk of the soil retention while creating a terraced effect.

Bottom line: While walls handled improperly become little more than sources of visual noise, walls thoughtfully considered and executed can become wonderful edge treatments that help the designer blend watershapes in with their surroundings.

concrete concerns

As suggested above in my mentioning of poured-in-place copings, concrete is another material that bears discussion

when it comes to coping and decking. Let's assume for the moment that we're all familiar enough with the practical use of this marvelous material and here can focus instead on its use as a visual element.

In my view, architectural concrete is one of greatest materials we have at our disposal as designers. It can be used to create a range of beautiful deck and coping treatments in a rainbow of subtle or bold colors, and it can be formed to just about any desired shape and thickness. For all that, it may well be one of the most misunderstood of all design options.

In actuality, concrete is in a completely different world from the one occupied by stone, brick, pavers or tile and, when used well, is nothing less than an artistic medium unto itself that can be used to create extraordinary works of art. Unfortunately, many designers (particularly in the pool/spa world) see it strictly as a utilitarian medium and have never geared themselves toward looking at it as anything other than a raw material that comes together in dull

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gray masses that are inclined to discolor and crack.

It's time for more watershapers to set aside preconceptions and prejudices and start to appreciate concrete's nobler nature. Just accept the fact that it *always* cracks, no exceptions, and never creates a perfectly uniform appearance and the sky is literally the limit. The key is controlling *where* it cracks and having some idea *how* its appearance will change – and then making sure clients' expectations line up with reality.

Many years ago, I had the pleasure of working with the great architect, John Lautner, who knew more than almost anyone on the planet about how to use the textures, colors and, indeed, the imperfections of concrete to amazing effect in creating homes, swimming pools and hardscapes of unparalleled beauty. In the course of that project, I worked with wonderful craftspeople and came to understand concrete as a design element in all-new ways.

Lautner worked with concrete in every imaginable form – textured, smooth, acid-etched, stained and brushed. He also favored board-formed concrete that revealed impressions of wood grain when the forms were removed. Ever since my experience with him and his crews, I've spent my career exploring the almost unlimited visual potential of this material and have tried to honor Lautner by using the material he most loved in interesting and occasionally unusual ways.

care and feeding

As with most design materials, working with concrete is definitely a matter of finding craftspeople who know how to form it, install structural steel and mesh, mix it and finish it. Otherwise, any of the hundreds of variables involved in mastering the material can make things spin out of control.

And there's a lot to consider, including the material's compression, tension, expansion, contraction and chipping – not to mention engineering issues related to structural steel and wire mesh and the practical and aesthetic issues having to do with cracking and weathering and sustaining visual effects. If you don't understand and manage those issues, the material will control *you* and you'll wind up with visual defects that make for client dis-

pleasure down the line. In other words, there's much here to be considered.

Take color, for instance – an exceptionally complex subject with respect to concrete. You can use all sorts of dyes and oxides to create different colors that are beautiful, but you can't expect to get the same color every time because there are too many variables in play. Differences in batches, curing times, aggregate mixes, troweling techniques or even the chemistry of the mix water impose slight distinctions, and these express themselves in all sorts of different ways over time and from one spot on a surface to another.

When you understand these variables and communicate effectively with clients about the behavior of the material, the wayward nature of concrete can even be used to your advantage. But if you don't and can't guide your clients away from expecting uniform perfection (or, worse, don't engineer and install it properly), architectural concrete can become a nightmare.

As I see it, the capacity to see and un-

derstand topics such as these – visual weight, balance, the nature of concrete – in the broad context of watershaping and of setting up coping and decks – is what separates the artist from the pretender. The good news is, there are ways to get the training and education you need to step up to a higher level, so why not?

Believe me, my own career is testimony to the fact that this kind of investment pays for itself over and over again as the years pass. **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 the Genesis 3 Design Group, which offers education aimed at top-of-the-line performance in aquatic design and construction. He can be reached via e-mail at david@tisherman.com.



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Fluid Melodies

For the past 20 years, Toronto-based artist, scientist, inventor, professor and musician Steve Mann has been inventing, creating, building and playing what he calls 'hydraulophones.' Part fountain, part interactive waterfeature, part musical instrument and in all ways unusual, these systems enable adults, children and anyone who cares to give one a try the ability to manipulate the flow of water to create musical notes, harmonies and melodies.

An Interview with Steve Mann

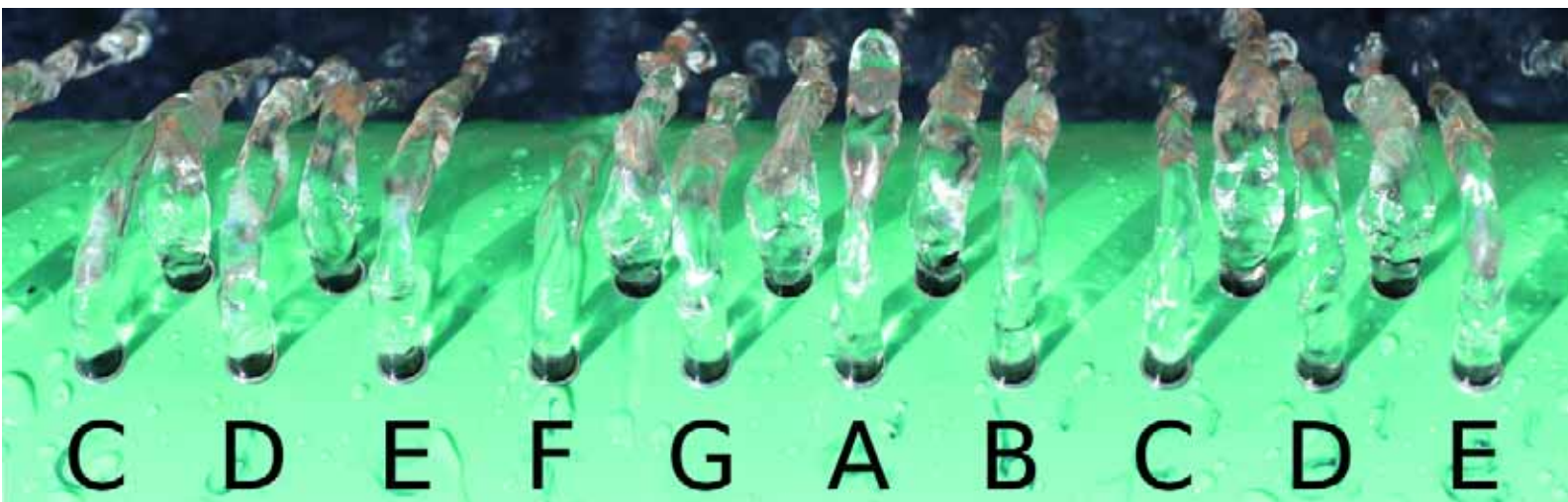
Not

to diminish the painted ponies of *The Wizard of Oz*, but Steve Mann's hydraulophones are horses of a different color. These watershapes come in all sorts of shapes and sizes, from landmark centerpieces that have the sculptural grandeur of pipe organs all the way down to water-flutes that resemble brightly colored tadpoles.

What's most remarkable about these devices isn't just their structural and artistic variety or the ways they look as visual art: It's the *sounds* they make. At first, the natural comparison is to a pipe organ, but as you listen, a variety of shadings and other sonic reverberations emerge, slip and slide around you.

What's more, hydraulophones invite people to insert their fingers into the jetting water to shape the sound and squeeze out the shape of each note, and a variety of sonic textures are possible depending upon how the flow is manipulated. With practice, participants can sculpt an array of purely aquatic sounds as well as what sounds like an entire orchestra of oboes, flutes and harmonicas.

The hydraulophone's inventor, Steve Mann, has been playing with (and playing) these devices for about 20 years now, finding more and more ways to put them in places where people can see, hear and become personally involved with them. We caught up with him early in December 2007 as he was rehearsing for a formal holiday concert at which his instrument of choice was to have a starring role.



Through years of development, the hydraulophone has become a serious musical instrument capable of great range and depth of sound – so much so that it has moved into the concert hall where it holds its own among conventional orchestral instruments.

tural environments: What a hydraulophone does is introduce a playful element into the setting in a way that enhances the scene rather than contradicting it the way an ordinary play feature would.

WS: So the concept of ‘play’ is extremely important?

Mann: My use of the word *play* is a double entendre in the sense that we talk about “playing an instrument” at the same time a hydraulophone is about getting people of all ages (not just children!) to “play” in the sense of a child playing with a toy.

I think that’s an especially fascinating concept: It’s as much about getting adults to play as it is getting children to play. And with hydraulophones, they are often invited to do this playing in spaces that one would not normally think of as play spaces – such as at the main entrance to a landmark architecture site.

WS: What made you think of marrying water and music?

Mann: When we learn about music in school, we’re taught that there are only three kinds of acoustic instruments:

WaterShapes: How did you start down this path of creating musical instruments that use water to create sound?

Steve Mann: I began by wanting to challenge the conceptual boundary between work and play.

A big part of the idea behind the hydraulophone is the notion of what I call the “urban beach,” a place where aquatic sculptures invite people not only to look at them as objects, but also become engaged with them as active parts of the environment. It’s a place where people can play in the

water with either their fingers or their whole bodies.

The great thing about a hydraulophone is that it injects this note of playfulness and alters one’s perception of a space in subtle ways – maybe even *subversive* ways. It works because a hydraulophone can be a majestic architectural centerpiece at the same time it brings aquatic play into the picture. In effect, it breaks down the separation between parks and beaches and serious places where people don’t typically think of fun and play.

Business parks or university campuses, for example, can be very serious architec-



strings, percussion and wind. As I studied music, I began to think of percussion and strings as being far more similar to each other than either of them are to wind instruments: Strings and percussion instruments both make sounds with solid matter while the wind instruments use air.

But the piano, for example, is both a percussion *and* a string instrument: It challenges this boundary. So before long, I came to think of only *two* categories of acoustic instruments – solid and gas – with two subcategories in the solid column (strings and percussion) and two more in the gas column (woodwinds and brass).

Taking this line of thought a couple steps farther, school also teaches us that there are three states of matter in nature – solid, liquid and gas. This led me to ask, “Why not try to create an instrument that works off matter in a liquid state? Why not take an instrument similar to a flute and have water flow through it instead of air?” In that sense, I was thinking of a hydraulophone as an entirely new category of instrument.

WS: Where were you when you first came up with the idea of creating a liquid musical instrument?

Mann: It’s something I’ve had in the back of my mind for a very long time, so I can’t think of an exact time or place. But if there was a specific trigger that really motivated me to further develop and perfect this invention, it’s an event I remember from the mid-1980s.

At the time, I was watching and listening as a liquid-nitrogen truck filled the tanks in a nearby building and remember being intrigued by the sound of the fluid flowing



Along a distant but parallel track, hydraulophones also moved onto the playground, where children (and their parents) are utterly fascinated by the curious sounds the tadpole-shaped Nessie makes when they play with the jets of water.





through the pipes and how it made a whistling noise that was actually a very pure note that would shoot up a perfect fifth every once in a while. This inspired me to make up a song in which I tried to capture the spirit of the sound: It was called “Liquid Nitrogen,” and to this day it’s one of my favorite songs to perform on a hydraulophone.

As I experimented more and more, I developed systems with high and low pressure levels in which different kinds of sounds come from the instrument depending on how you position your fingers over each of the water jets. What’s really fun about hydraulophones is that sounds differ when you block the edge of the water jet (where the water is moving with less velocity) as compared to blocking the center.

WS: What made you think you could do all this? How did your background influence you and contribute to the hydraulophone concept?

Mann: Ever since I can remember, I’ve been interested in interdisciplinary studies and thinking. I went to the Massachusetts Institute of Technology because MIT is the kind of school where students are encouraged to be technically crazy as well as artistically crazy over a wide variety of disciplines.

This education taught me to think in terms of combining disparate concepts to create something totally new. The hydraulophone is a perfect example of that

kind of thinking: On the one hand, it’s a technical device with various hydraulic and structural elements; on the other, it’s very much about art both in being a musical instrument and in being sculpture. And when you consider that it blends art and technology with fundamental forms of human behavior, you can see that it cuts across several major conceptual boundaries.

That sort of creative collision has always fascinated me. I think that’s where new things come from, by combining ideas and applying them in ways that haven’t been considered before. At the same time, I take personal joy in disrupting traditional categories and like the fact that I’ve stirred up some controversy in the field of organology because authorities in the field simply don’t know how to categorize hydraulophones.

WS: Do you particularly enjoy challenging conventions?

Mann: I think there’s something to be said for asking questions and challenging boundaries. As James Baldwin once said, “The purpose of art is to lay bare the questions which have been hidden by the answers.”

Insects exist by performing very specific, categorical functions. Humans are more complex, and I believe we should have the capacity to transcend categorization. And, yes, I do like the fact that the work I do confounds categories.

WS: When did you create the first hydraulophone?

Mann: I’ve invented, designed and built hundreds of different types of hydraulophones through the past two decades, each of them quite different from one another, so it’s hard to put an exact date on it. But it was at some point in the mid-1980s, when I composed “Liquid Nitrogen” and began pursuing distinct sounds, tuning and intonation with my early hydraulophones.

WS: How have they evolved?

Mann: The first hydraulophones were very difficult to play. You had to press down on the jets *really* hard to create a note – upwards of 60 to 70 pounds of pressure per square inch. In fact, when I first started playing back then, I would do pushups on my fingertips to make my fingers strong enough to play the instrument comfortably – and even then my hands would quickly become extremely tired.

In the years since those first incarnations, much of the development/refinement process has been aimed at creating instruments that require just a light touch so that everyone from very small children – even babies – to elderly people with arthritis can play them.

It interests me that people talk about hydraulophones as though they’re all one thing, but I’ve actually made hundreds of different instruments that respond in different ways



and operate on vastly different principles. In actuality, it's a whole family of instruments that use water: Some are simple and others are extremely complex.

WS: So the use of water is the unifying characteristic?

Mann: Obviously, yes, but there's also the way they're played that unifies them and makes them all "hydraulophones." The one thing they all have in common is that you have a row of water jets and make sounds by pressing down on those jets, obstructing the flow and creating different notes and chords.

The whole range of hydraulophones shares this unifying characteristic. On one end of the spectrum are massive public-art pieces that exist as permanent installations; on the other, we make very simple hydraulophones that are scaled for use by small children – and there are numerous iterations in between.

WS: What actually creates the sound?

Mann: That's an interesting question, because among people who make musical instruments of all sorts, there's a constant debate about what actually makes the sound. In a woodwind instrument that has a reed – such as a clarinet, for example – the reed vibrates in such a way that it can be partially credited with generating and manipulating air movement.

In a reedless wind instrument such as the flute, however, the sound is most certainly made by the air. Thus flutes are purer examples of wind instruments: Although the sound is modified



The potential these watershapes have to attract the attention of musicians, parents, children, seniors – people of every age and walk of life – has made hydraulophones star performers in public places, where they break down basic social inhibitions and encourage interactive play in a way few other installations ever could.

by covering up finger holes (or pressing the keys or levers) in different combinations, the wind is what makes the sound.

Hydraulophones are new, so their sound production is not as well understood and is something we're investigating. What I've done in all cases is replace human breath with the flow from a garden hose or pump to create different notes at different finger holes while

maintaining the ability to affect subtle, independent changes in sound at each hole.

WS: Are all hydraulophones custom-made for specific applications?

Mann: Not quite. I've worked through the years with designer Chris Aimone, and together we've come up with a "standard" hydraulophone for interactive waterplay. These units resemble giant tadpoles or small whales – a sort of sea-serpent-like shape, so we call her "Nessie" after the Loch Ness Monster. Children seem to love her.

On larger scales, Chris and I do custom design/production work, generally breaking things down into three steps: initial study, design and execution. To that extent, larger pieces of the sort that become civic sculptures are definitely application-specific instruments.

WS: I can't help noticing that you refer to hydraulophones using the female gender. Why is that?

Mann: It just seems to work that way. The Loch Ness Monster, for example, is always referred to as "she," and ships are usually also referred to in feminine terms – as are many large bodies of water such as lakes. But there may also be something else at work here, something more primal, because people have told me that hydraulophones speak with a feminine voice.

The Ears Have It

This is a case where hearing is more than half the fun.

To get a clearer sense of what these instruments are all about, go to the Internet, type in www.youtube.com on your browser and search on *hydraulophone*.

You might also want to look in at www.fountain.ca and www.wearcam.org – sites with more information on hydraulophones.

There are several film clips for viewing, and we'd recommend closing your eyes to drink in the sounds if it wasn't so much more interesting to watch.

– WS

I once played a concert in New York, and afterwards a woman came up to me – crying and smiling at the same time – and said that she was really moved by the performance. Then she said something that's stuck with me ever since: "This is really fantastic, it's really *woman*. Air instruments are male, but water is woman." We don't necessarily want to read too much into it, but there's probably an aspect of water that invokes the whole idea of the return to the womb.

WS: Were you influenced by the Water Organ at Villa d'Este and its use of water to create sounds?

Mann: Actually, no. People have asked me before if I was inspired by Greek or Roman fountains that made sounds, but those installations didn't use water as a "user interface," nor did they make sounds with water. Instead, the water was a source of power that moved air to create sounds. In a hydraulophone, by contrast, the water isn't just a source of power, but is also both the user interface and the source of the sound.

WS: Where have you been installing your hydraulophones? What sorts of environments?

Mann: So far, we've placed them in public parks, college campuses, community aquatic centers, waterparks and even some retirement villages, and I have the sense that they'll work just about anywhere people congregate. What's unique about them is that they bring the concept of waterplay to a level of sophistication that makes it appeal to people of all ages. Children love them and so do adults; in fact, some older folks with arthritis actually use hydraulophones in music therapy, which strikes me as a wonderful application.

It's interesting to note that, while aquatic play appeals to people of all ages, adults sometimes don't indulge in it because of social constraints on behavior: You might *want* to run through a fountain on a hot day, but you don't do it because that's not what adults generally do unless they've imbibed a bit and have broken down their inhibitions.

But hydraulophones are musical instru-

ments, so that whole psychology shifts and adults feel free to play because they're making music: That's a much more sophisticated form of play than simply splashing around and getting wet.

There's also the educational aspect: Whereas parents are often hesitant to let their children play in public fountains and come home with wet clothes, they seem to take delight at hearing their kids play simple songs on the hydraulophone.

We even do music lessons on the hydraulophone: Learning music has never been this much fun!

WS: How would you describe your creative process?

Mann: That's not so easy to answer. With the hydraulophone, for instance, I was directly inspired by a dream I had that I was playing a fountain the way someone would play a pipe organ, but well before then I'd spent a great deal of time in my childhood taking things apart to see how they worked.

Hydraulophones function and exist based on known scientific principles using common materials. They may be based on what may seem wild-eyed or off-the-wall concepts, but the process of making them is very thoroughly grounded in reality.

One of the things I like most about what I do is that I've given myself license to dream *and* work – to have my head in the clouds and my feet on the ground at the same time. Again, it's my way of breaking down the boundaries between technology and art.

WS: Do you think the fact that hydraulophones use water to make music is the main reason people find them so fascinating?

Mann: Absolutely. There's something almost otherworldly about the sounds they make, but I accept the fact that the water itself stirs people's imaginations and evokes emotional responses: They don't have to think about it much to conjure the almost primal feeling of being connected to nature by touching water. When you add in the fact that by touching water *you make music*, something very interesting happens that is fairly profound at the same time it's a lot of fun.

Continued on page 44

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There's something frolicsome about it. You don't have to be a musician to enjoy playing it, but musicians go nuts because they can play songs while having all that fun.

WS: Do you write music specifically for hydraulophone?

Mann: Yes I do, and I've even invented new kinds of musical notation for hydraulophones to capture their full capabilities.

A hydraulophone has all the notes that you'd expect to find on common orchestral instruments, but the sound has a different quality from any other instrument I've ever heard. Its basic sound suits songs written in minor keys – which is fantastic because children seem to respond well to music in minor keys for some reason – but of course it can be played in major keys as well.

The sound is almost otherworldly, a singing voice of a very special sort. And with practice, you can learn to bend and squeeze notes by the way you press the jets, which allows you to expand the range and create notes that don't exist on standard instruments.

WS: Because hydraulophones exist in the environment and can be played by anyone who wants to give it a try, do they change the way you think about 'performance'?

Mann: Most definitely. In fact, they completely break down the separation between the audience and the performer.

In a typical concert, the performers sit on a stage, protected by the proscenium, and the audience sits on the other side of that barrier at a set time in anticipation of hearing well-rehearsed pieces of often-familiar music. By its very nature, a hydraulophone deconstructs that entire system, creating a space in which there's an ongoing performance with no separation between the audience and the performers.

In addition, one of the things I really like about the hydraulophone is that you can see what it sounds like. Not only does the same note sound sadder when you cover the edge of a finger hole instead of its center, but it also looks sadder, with the water jet drooping down in a sad-looking kind of way. This makes playing the hydraulophone very visual as a performance medium.

Also, because the hydraulophone makes sounds on its own when no one's playing it, you don't even need performers at all: Proximity is all it takes to enjoy what's happening. But usually, once people recognize that all they have to do is walk up, press the jets and make music, they don't hesitate to get involved: Hydraulophones are very friendly in that way.



At the same time as they encourage play, larger hydraulophones can also serve the monumental needs of public spaces, arriving on the scene like alien pipe organs to create visual cores for plazas, courtyards and civic centers.



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The Science of Lighting

By Mike Gambino

When designed and installed properly, a landscape lighting system enables clients to enjoy their water-shapes and landscapes well after the sun goes down. But achieving those satisfactory results, says lighting expert Mike Gambino, requires an understanding not only of the aesthetics of lighting design, but also an appreciation of the technology behind the beauty and an ability to lay components out in ways that electrically balance the system.

As I see it, successful landscape lighting is a two-part process: First, the designer applies aesthetic principles that create the art, then he or she supports that artistic vision with scientific and technological savvy. One without the other doesn't work: You can't effectively practice the art until you've mastered the science.

In my 17 years as a lighting designer, I've encountered lots of professionals who have the artistic part of the equation down pat but fall well short when it comes to working with electricity. The plain fact is, you can use the best fixtures in the world and understand the aesthetic issues like the back of your hand, but if you can't consistently deliver power to those fixtures at correct, reliable voltages, the overall system will not perform properly and has the potential to become a maintenance nightmare.

There's no way a single article can bring anyone up to speed with all of the issues involved in the science lighting. Instead, my intention here is to introduce watershapers to a basic, commonsense approach to laying out low-voltage, halogen lighting systems, the goal being to enable you to converse intelligently and persuasively with lighting designers in the interest of helping your clients obtain systems that not only look good, but also function properly.

Proper Function

Just as is the case with watershapers, there's a definite need for taking care in selecting a lighting designer. These days, in fact, a big part of my business involves fixing systems that don't deliver the requisite 11 to 12 volts of electricity to each of their low-voltage halogen fixtures. (And it's fair to say that most systems these days use halogen technology: Since arriving on the scene some 20 years ago, these lamps and fixtures have both revolutionized and come to dominate landscape lighting.)

Time and again, I'm called in to evaluate systems installed by someone who may have had the right ideas when it came to making a setting look good but who simply lacked the necessary understanding of basic electrical concepts and made the client compensate for that deficit by paying for frequent, expensive lamp replacements in systems generally inclined to breakdowns.

Overcoming these long-term maintenance concerns is why I'm such a stickler when it comes to defining and achieving proper voltage levels: I know that if a system operates outside the recommended voltage tolerances (a common feature of improperly designed systems), fixtures won't function correctly and will either be too dim or burn too hot.

If the voltage reaching a halogen lamp is too low, the tungsten gas in the lamp won't deposit properly on the filament: The de-





In the field, I start the layout process by placing flags where I want lighting fixtures to go, then work my way back through each branching series and home run in the system to ensure each group of fixtures will be adequately served with respect to power delivery.

sired “halogen effect” therefore cannot occur and the light output will be significantly dimmed. Conversely, if the voltage is too high, the lamps will burn too brightly and the desired visual effects will be distorted by hot spots. Moreover, when lights don’t operate at the proper voltages – high or low – they don’t last as long as they should. These early burnouts frustrate clients, which is one of the main reasons I receive calls to work on existing systems.

The picture is somewhat complicated by the fact that halogen lamps are available for operation over a range of voltages, with 12 and 120-volt units being the most common. To me, the lowest-voltage (12-volt) option is the best (and safest) option: When installed in properly designed systems, these lamps offer tremendous output relative to energy consumption and will last a long, long time.

The specification sheets for most of these 12-volt halogen lamps say that 10.8 volts are needed to generate enough heat to create and perpetuate the halogen effect. When input falls below that level, these lights can’t work as designed – it’s as simple as that.

But as I see it, one of the keys to working successfully with halogen lamps is to stop thinking about them as individual

components and instead to see them as links in systems of variable lengths, with electrical balance within any given system being the goal.

Working Toward a Balance

It’s not a perfect analogy, but you might find it useful as watershapers to think of lighting systems as being similar in some ways to hydraulic systems: Where every jet in a spa has a recommended operating tolerance relative to flow and pressure and a balanced hydraulic system is one that creates a condition where all jets in the system operate within the proper range, the same generally holds true for lighting systems: You want to create a system where every fixture operates within its specified range.

Those who don’t understand the need for this balance often (and unwittingly) design systems where one lamp might be receiving 9 volts and another receiving 13 or more. You don’t have to be an electrical engineer to get the point that, under those conditions, some lights will be dim while others will burn too hot and prematurely fail. To avoid these problems, I make certain that every fixture in a cluster of lights operates within a half volt of the others within the 11-to-12-volt range.

This objective puts a tremendous amount of pressure on the system-design process and the way I lay out my systems.

In my view, the best place to start is with the power feed (or “home run”), which is the wire that delivers power from the transformer to the fixtures. Just as with water and pressure in hydraulic systems, as electricity flows over a length of wire, voltage drops or attenuates because of resistance it meets along the way. Therefore, I lay out my systems so that these home runs feed small clusters of lights situated no more than several feet apart from each other.

My systems are all arranged so that the home run connects to a fixture that acts as a hub, with all other fixtures on that circuit wired to either side of the hub in what’s referred to as the “T method.” A common (and *incorrect*) alternative to this is the series (“daisy chain”) approach in which the home run feeds a single fixture; wires then pass in sequence to a succession of other fixtures along the line. Using this option, fixtures at the end of the line will inevitably receive less voltage than the one wired directly to the home run.

I group my systems in sets of three to five fixtures with lines branching off of the hub because this arrangement helps me equalize the voltage at each fixture. I also take a conservative approach to the standard manufacturer recommendation that there should be no more than 25 feet of wire between the home run and the last fixture on a given side of the hub. In fact, I seldom come anywhere close to pressing that limit: If a layout has me putting a fixture any more than 15 feet away from the home run, I’ll use a separate home run for that fixture.

Yes, this often means my systems become quite complicated in a schematic sense, but it’s the only way I’ve found to deliver the desired, fully balanced results my clients crave.

Wired Up

After appropriate layout, the next key to good system design has to do with the wires chosen to get the job done.

There are several schools of thought on this, but experience has taught me to stick with 12-gauge wire – and this is despite the fact that many manufacturers



I'm a firm believer in checking and rechecking voltage outputs and amperage draws at the transformer. As I see it, a multimeter is to a low voltage landscape lighter what a stethoscope is to a doctor: It's the only way I've found to be assured that lamps in the system are getting power at the proper level. (Notice that all cables are color-coded for easy identification in the field.)

pre-install 16-gauge wires with their fixtures as 25-foot leads ready for connection to the home run. As I see it, 16-gauge wire leads to a high level of voltage drop that I can avoid by using 12-gauge wire with runs of a more conservative length.

Without delving deep into electrical theory, lamp wattage is another factor here. Most low-voltage lamps operate at between 20 and 50 watts, with higher wattage meaning brighter light and greater resistance (and voltage drop) at that fixture. Using this consideration to my advantage, I always connect my home run to the fixture operating at the highest wattage.

If, for example, I have a cluster with four fixtures, two operating at 35 watts and two at 20 watts, I'll establish the hub at one of the 35-watt fixtures. Then I'll run one wire to the other 35-watt fixture and the other to one of the 20-watt fixtures and then the next 20-watt fixture, thus balancing the voltage drop to the



I typically install the home run of cable directly to the 'middle' fixture in any given grouping and test the voltage there to determine the power terminal on the transformer to which I will be connecting that particular wire to achieve an optimal level of 11.4 to 11.8 volts. As long as the other fixtures in the grouping are relatively close to this power connection, there's no need to take readings at the other fixtures.

greatest degree possible for that set of fixtures, with 35 watts on one side of the hub and 40 on the other.

Again, distance is extremely important: If, using the example just described, the 35-watt fixtures are just five feet apart and the hub fixture is operating at 11.5 volts, you'll probably only lose about two-tenths of a volt between those fixtures – well within the target operating range. When the distance is greater and I see a voltage drop of, say, half a volt or more, I'll sidestep any potential problems by establishing a separate home run.

As far as installation is concerned, I depart from some other lighting experts in that I don't typically use junction boxes to create hubs. Instead, I'll wire the home run directly to the fixture itself. I do so because, through the years, I've found that the added crimp connections where the 25 feet of 16-gauge wire transitions to the 18-gauge socket wire sometimes come apart; moreover, junction boxes themselves can be hard to find later on, especially if the landscape has subsequently been altered in some way.

Transformed Reality

The next key to creating an effective, satisfying lighting system has to do with knowing the capabilities and limitations of the transformers you're using.

These days, most commercially available low-voltage lighting systems use multi-tap transformers. These units have multiple ports or taps that connect at different voltage levels, commonly as 11- to 15-volt outputs in single-volt increments. Connecting home runs to the different taps enables you to compensate for voltage losses experienced with a given line.

The problem with transformers, however, is that they're not all created equal. Let's say, for illustration, that you have two identical systems wired to transformers that have the same nominal outputs but come from different manufacturers. Experience tells me that one might deliver the exact specified voltage, but the other could be off by a volt or even more. That's a *huge* difference with the sort of sensitive systems we're dealing with: If you're not aware of the idiosyncrasies of the transformer, you can do everything right and *still* end up with



This transformer unit is typical of those I use in my projects. It's a custom style I've worked out with one of my suppliers and has the advantage of allowing me to adjust voltages at 0.5 volt increments – a big edge when it comes to setting up groups of lamps so they all receive power within the target range. In addition, this unit features magnetic primary- and secondary-circuit protection, bypass of control modules for service, a manual override, LED indicator lights and enough room to hold three control devices, such as a timer, a photocell and a dimmer switch.

an out-of-balance system because you don't know the actual voltage you're delivering to the hub.

The reason for this supplier-to-supplier variability is the fact that there are no standards for how transformers should react once loads are placed on them. Each vendor chooses which size of wire to use in their cores and coils, for example, and each one chooses a system configuration. In addition, when transformers are checked on the assembly line, they are tested unloaded for proper output despite the fact that a load will change output to differing degrees.

Some might argue the point with me, but this variability in performance has led me to ignore the charts that accom-

pany transformers. Instead, the only way to get predictable results is to mock systems up and check outputs with a volt meter: Only then can you be absolutely sure of the voltage level you're delivering to the hub.

In my own practice, I've become so obsessed with controlling transformer outputs that I now work with a vendor that makes me units featuring taps at half-volt increments – that is, 11.5, 12, 12.5, 13 and 13.5 volts on up to 15 volts. This enables me to create extremely precise voltage levels for various lighting clusters while staying within the 11-to-12-volt operating range with each of my fixtures.

This can be done with single-volt-interval transformers, but I've found this

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fine-tuning enhancement to be most helpful, especially when you have 11.2 volts at the hub: This will result in less than 11 volts being delivered to downstream fixtures, but moving up to the next-higher tap will leave you with an unacceptable 12.2 volts at the hub. With 0.5-volt increments, however, 11.7 volts is just right.

The other big variable with transformers is simply how many cables you can connect to them. The units I use have super-sized terminals to which I can attach up to eight 12-gauge cables per common tap (of which I have two per 25-amp circuit), thus giving me the capability of connecting 16 cables. Some units have smaller terminals that handle just three cables – a capacity factor that plays a large role in system design.

Also, there are big differences in quality with respect to the connections themselves: Some transformers, for example, enable to you to make internal connections, while others (generally on the low end) have only external terminals that will be exposed to the elements and other potential types of damage.

At the Source

Moving even farther back along the electrical chain of things, it's important to ensure that the transformers in any given system aren't overloading the breakers on a home's electrical service panel. A 120-volt circuit will support a total of 2,400 watts, but it is best never to load them with more than 80 percent of that capacity, meaning you can predictably draw approximately 1,800 watts from any single 120-amp circuit.

On small projects, for example, if you have a dedicated breaker for the lighting system, a single circuit often does the trick as it takes many 20- to 50-watt fixtures to exceed the 1,800-watt level. Obviously, however, if you have a large system with hundreds



The length of a wire run in a lighting system makes a big difference in performance because of voltage drop. In this case, for example, the need to bury the cable along meandering contours added to the length of the wire needed to create the home run – not necessarily a huge factor, but enough of one that it required me to recheck voltages once everything was in place.

How Low is 'Low'?

What do we mean when we say "low voltage"?

These days, there are two schools of thought: To some, *low voltage* means anything lower than 30 volts (as in the National Electric Code) despite the fact that the Underwriters Laboratories (UL) won't approve transformers operating at levels greater than 15 volts. Indeed, some manufacturers still produce systems that operate at higher voltages, but I'm in the other camp, which means that I believe *low voltage* refers to those systems that operate at UL-approved levels of 15 volts or lower.

The biggest problem I see with systems that operate above 15 volts is that, when a light or two burns out, the voltage levels at the other fixtures rise dramatically and will burn out remaining lamps in rapid order. (This happens because a burnt-out lamp offers no resistance in the line, so voltage levels rise for other lamps on the circuit.) When more lamps burn out, the problems multiply and you have a domino effect that will harm every lamp on a particular line. (This is a particular problem on circuits connected to taps of higher than 15 volts.)

Another issue, of course, is inspections: Although such checks are rare, landscape lighting systems are sometimes scrutinized and you can run into problems for using equipment that lacks UL approval.

– M.G.

of fixtures, you need to be aware of circuit capacity and make provision to tap into multiple breakers.

Some lighting specialists get themselves into trouble when their systems share a circuit with other systems – pool equipment, for example. The other system might demand a lion's share of the circuit's available wattage – so much so that when everything is operating, the load will exceed capacity and the circuit breaker will overheat and cut off all power.

The best situation is one in which the lighting has its own circuit. Failing that, you need to know the peak draw of all other devices on the line and plan accordingly.

In addition, you need to consider available amperage. As a rule, I prefer tapping into 120-volt circuits that operate at 20 rather than 15 amps. The reason for this is straightforward: A 15-amp circuit is wired with 14-gauge

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wire and creates a greater voltage drop on the 120-volt or primary side than does the 12-gauge wire used with 20-amp circuits. That's important and cues us into the fact that we need to consider the voltage drop on the 120-volt side of the system – that is, losses that happen before the power ever reaches the transformer.

In systems where you can locate the transformers relatively close to the service panel (as is often the case with new construction), this sort of voltage drop isn't likely to be much of an issue. But where you're adding lights to an existing property, the transformers might be set at some distance from the service panel, making it imperative for you to factor in the voltage drop and design your system accordingly.

Again, these electrical-system concepts are roughly analogous to hydraulic systems and the flow, pressure and resistance found in water lines: You can only divide the flow up based on what's available. Thus, a 12-gauge wire connected to a 20-amp, 120-volt circuit only a few feet or inches away from the source delivers more capacity than does one where the electricity is flowing over a longer run before it reaches the transformer.

Practical Terms

When you break all of this down and look at the lighting process as a methodical set of key steps, it all begins to make sense. Just as with hydraulics, it's a case of science and art going hand in hand: If you want to achieve the desired results, you need to know what's involved in both. In my case – and in a basic approach I suspect is used by watershapers as well – I start by designing projects in aesthetic terms, then double back and lay out the electrical system to accommodate the results I'm trying to achieve.

Once the artistic game plan is in place, I flag the entire system, locating each fixture so I can see the length of the wire runs and determine the loads within the system. Then I break the system up into clusters based on the layout.

To illustrate, let's consider a large property that requires 120 fixtures and 10 multi-tap transformers. That's intimidating

on its face, but if you break it all down and look at it as a series of vignettes, it's relatively easy to balance the loads on each home run. In other words, a big system is really just a combination of smaller, more manageable parts.

Before I get that far, however, I ascertain the balance on the 120-volt side (that is, from the circuit breaker on the service panel to the transformer) and on the low-voltage side (from the transformer to the hub and the fixtures on that line). The more transformers you add to a 120-volt line or the more fixtures to a single hub, the greater the voltage drop. Thus, what you're really doing is considering the voltage for each grouping of lights all the way from the service panel and through the transformer to the fixtures themselves.

This may all seem terribly complicated, but experience helps – and there's no substitute for starting off with the right way of looking at these systems on a scientific basis. But where I get the impression that working with all but the most complicated hydraulic systems can be a matter of some approximation on the part of a watershaper, my work as a designer of electrical systems calls for a precision that can't be left to habit, supposition or chance.

This is why, when I hook up a system, I'll bury all the connections to the fixtures *except* for the fixture linked to the home run: This is where I do final checks on voltage levels.

Generally, I start by connecting everything to the 12-volt outputs on the transformers, having color-coded every wire so I can keep track of which clusters I'm testing. If I test the blue wire, for example, and it reads 10 volts at the home run fixture, I know that I need to move that one from the 12-volt to the 14-volt tap to bump it up by two volts. If the yellow wire tests at 10.5 volts at the hub, I'll move it from the 12-volt to the 13-volt terminal to move it into the desired range.

Careful Considerations

Make no mistake: This testing process is absolutely critical. If I test a system and can't bring the voltages within the desired range by adjusting the connections at the transformer, then I need to

reconfigure layouts so that each home run operates within the target range.

This is why the half-volt increments on my custom transformers come in handy: With this flexibility, I can almost always hit my targets without having to go back to the drawing board.

While I suspect some of you out there will want to take this information and apply it yourselves, as I mentioned at the outset, that's not my goal here. Ultimately, what I'm hoping to foster is your increased awareness of the issues involved



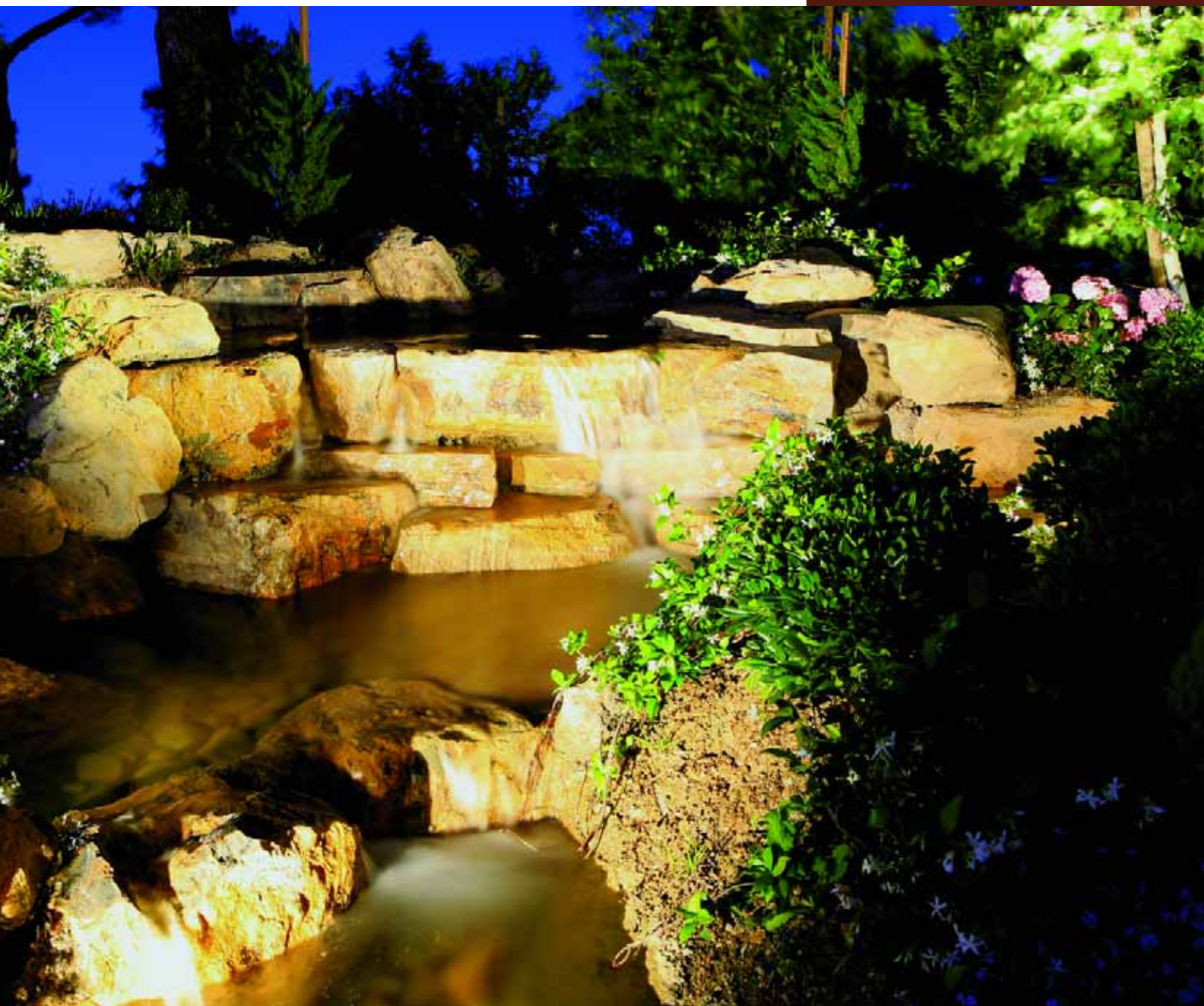
in good lighting design and give you a working vocabulary that will let you speak with lighting contractors on an informed basis and be better advocates for your clients.

Indeed, creating perfectly balanced systems takes experience and a polished, educated, experienced understanding of how all the electrical factors involved in lighting-system design work together. As with many endeavors, there's a broad range of quality with respect to available products and the expertise of

the designer or installer, so being informed is your best assurance of obtaining good results.

As I think you can tell, my own approach involves leaving little (if anything) to chance and doing all I can to apply my knowledge and experience to deliver *great* results. Ultimately, you need some of this sort of understanding to serve the best interests of your clients and make certain they're happy when the switches are thrown and the lights bring your nighttime settings to life.

There's a simple reason why I want my lighting systems to perform to the best of their technological capability for as long an operating life as possible: When things get this complex, maintenance becomes a huge issue. No client will be satisfied if there's a regular need to have someone scamper over the rocks to keep things looking their best.







Even for a watershaper who previously specialized in the largest, most complex sorts of commercial installations, the challenges James Atlas ran into with this multi-faceted residential project stretched him to his operational limits. Designed for an intensely creative client on a property in suburban Chicago, the work took more than five years to complete and grew to include a wildly elaborate palette of design elements and details.



Shell Games

By James Atlas

It all started in 2002, when I was contacted by an architect who'd been retained to design a recreational complex for a huge estate in a wealthy Chicago suburb. I knew at the time that this would be big, but in those early days I had no clear idea exactly what it would ultimately entail.

It's a familiar story: Before the call came in, the homeowner had spoken with a number of pool-contracting firms in the area and had visited a number of projects that failed to impress her. The unusual thing is, at the time she called I was focused exclusively on pursuing large-scale commercial projects and waterparks and didn't see anything even approaching a good fit.

Nonetheless, she prevailed upon me to show her one of my waterpark projects and apparently was impressed enough by both the scale and the quality that she decided we were a great fit.

In retrospect, her decision wasn't too surprising given how grand and complex everything about this project was from the get-go. Even the site visit was impressive, given the 140 acres of forested land, the multiple homes on site and a primary residence set back several hundred feet from the road. The grounds included miles of horse trails, a massive lake/waterfall complex and, under construction, a tri-level pool house that was to include, among other amenities, an elaborate theater complete

with an orchestra pit.

The client was thoroughly engaged in every detail and was a constant source of feedback and ideas. Well-traveled, bright, educated and more than capable of holding her own in design-related conversations, she's passionate about art and culture and provided us with a rich source of inspiration in direct suggestions and in the objects she'd collected through the years.

Coming to Terms

As one example of just how creatively ambitious she could be, one of the bathrooms in the pool house is painted from floor to ceiling with a mural of a fox hunt: Every person in the painting is a family member, with the visual space separated between the living and the departed. This level of expression reaches throughout the project, as evidenced by another spectacular detail in the form of a ceiling painting above the indoor pool that features accurate renderings of constellations lit with fiberoptic stars.

But the pool house also was to have a utilitarian side, including a full kitchen, laundry facilities, vast amounts of custom woodwork, 18th-century stained-glass windows imported from England and an elevator. Suffice it to say, this was a client who observed no limits when it came to doing as she pleased.

At first, our scope of work was limited to an indoor swimming pool to be installed inside the pool house as well as a freeform outdoor pool. But that was just the beginning, and before long the project grew to include multiple watershapes and a long list of design details. Even for a firm that specialized in outsized projects, this soon became one of the most challenging we'd ever tackled: Truly, it pressed us to our creative and technical limits.

In addition to the two pools, we eventually were engaged to design and install an indoor spa, wading pool and fountain as well as an exterior wading pool and spa, an outdoor hot/cold therapy pool, a waterfall, a swim-in sauna and a sliding acrylic door that was to separate the indoor and outdoor pools – this last being by far the toughest single element of the project. The outdoor pool was to have a vanishing edge, extensive rockwork and various sculptural, lighting and fire features. The vanishing-edge basin alone became so large that it is essentially a watershape unto itself.

And those were just the key physical features: In addition to those large tasks, we also tackled a seemingly endless string of small details, from extraordinarily elaborate tile mosaics including a coral reef and “cave paintings” in the sauna to a massive, all-tile clamshell that cantilevers over one end of the indoor swimming pool.

All of this had to be engineered and built by a company familiar with complex structural issues, construction techniques

The process of building the indoor pool was complicated by the fact that, in addition to the shell for the pool itself, we were also setting up the adjacent spa and wading pool as well as the swim channel and the support for a clamshell detail of an as-yet-undetermined nature. It was, simply put, a complex forming process and shoot.



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and hydraulic efficiencies. And everything was made even more challenging by the fact that success was a moving target: The project went through numerous design iterations through the years, and those of us who stuck with the project for the duration (basically us and the general contractor) had to deal with a steadily changing cast of contractors and subcontractors.

Celestial Eclipse

The first element we worked on was the indoor pool, an elliptical watershape that was a fixed part of the design from the very start. Measuring in at 18 by 40 feet, it's large by residential-indoor-pool

Design (Denbigh, Wales): Spun off a similar design they'd done that gives the impression of having a chiffon scarf draped over the steps and part of the pool bottom, it's a beautiful image that suited the space perfectly.

But we'd built the shell early in the process and hadn't known at the time about the tile treatment, so the steps weren't shot and trimmed with anywhere near the precision required to accommodate the mosaic. As a result, we spent many days brown-coating the steps, building them out to match a newly defined set of dimensions. Fortunately, we were privileged to work with top-notch craftspeople: When the time came

India that she had us install as a medallion in the floor at the entrance to the pool house: Its beautiful lapis color was something she wanted to match with the waterline treatment. We then completed the picture by harmonizing the tile selection and the blue of the scarf mosaic with a complementary Diamond Brite pool plaster from Southern Grouts & Mortars (Pompano Beach, Fla.).

Before we could tackle this finish work, of course, we had to step aside and let the general contractor and the painter complete their overhead work. When all was finished with both these phases of the project and all the fiber optics were in place, the "stars" reflected on the surface



Once we were done with the shell of the indoor pool and its associated waterfeatures, we stepped aside so the pool house could be built over and around what we'd done.

standards and was meant to be big enough for lap swimming. On either side of the indoor pool nearest the outdoor pool are a spa and a wading pool, both with radii that follow the contours of the pool and appear somewhat like the fins on a rocket ship.

The indoor pool itself is fairly standard: We built the shell during construction of the pool house, then stepped away once the shell had been shot to allow for completion of the structure around it.

When we moved back into the space some months later, we started on a tremendously ambitious pool interior that includes a mosaic by Craig Bragdy

to install the tile, it all fit like a glove.

The handrails were another challenge: The client had seen some beautifully curvaceous rails in a hotel in San Francisco, took a picture and let us know what she wanted. Naturally, these were not basic, stock items, so we had to find a fabricator who could make them from stainless steel to precise tolerances. The only vendor we found that was willing to tackle the job was Spectrum Products of Missoula, Mont.

As elaborate as were other details, the waterline was a basic six-by-six-inch ceramic tile in Gothic Blue from Noble Tile of Tempe, Ariz. The owner chose the color to match a tile-topped table from

of the pool took on a magical appearance – a subtle, truly spectacular effect.

Cracking the Shell

The indoor space is marked by scores of other significant details, but in terms of complexity, none holds a candle to the giant clamshell that hangs over one end of the pool. It had been envisioned as part of the design from the beginning, but no one on the project team could get a handle on exactly what the client wanted. It was one of those rare times when her words and descriptions weren't quite enough, so it was something we basically tabled until the schedule really left us no choice.

The architect had worked with a couple

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of firms that specialized in various decorative displays, but the best anyone had come up with to date was an awkward-looking structure with large footings and intrusive supports – something they all seemed to think was needed as a safety measure with what was to be, after all, a big overhead structure.

During a meeting with Craig Bragdy Design's Nick Powell in which we were discussing various tile details, someone brought up the shell. Powell, almost as an aside, said he'd built something similar in the past; before long, he was quizzing the client to get a fuller impression of her idea.

She left for a few moments. Returning with a large, shell-shaped pewter ashtray, she said that this was what she was after – only several times larger and suspended over the pool. Undaunted by the manifest difference in scale, Powell volunteered his company to bring her idea to fruition. A few sketches later, the client authorized him to proceed.

To keep the weight to a minimum, Powell's company contracted with a Welsh shipbuilder to construct a substructure out of the same material used to make the hulls of ships. They delivered the armature to Craig Bragdy Design, where artists applied the tile and then shipped the completed 13-foot-diameter masterpiece to the job site, where it now rises to a point about eight feet above the end of the pool wall.

The artists in Wales made the shell look as realistic as possible, with a beautiful mother-of-pearl treatment on the underside and a knobby, rough finish on the top – truly spectacular.

The shell's footings are integrated into the pool shell at the point where the spa and the wading pool meet. We triple-reinforced the connection with rebar and thickened the beam at that point to a three-foot width. This left us with the challenge of finding a way to conceal the various structural elements. Once again, Powell came through by wrapping the base of the shell in a shroud of coral mosaic.

The shell arrived on site in three pieces, and there was great anticipation as they were craned into place – and great relief when everything slid together. The shell was an immediate hit – especially when we turned on low-voltage uplights that illuminated the underside of the shell with a wondrous, shimmering, iridescent glow.

Official Passage

Also beneath the shell is a swim-out channel that runs from the indoor pool and through the deck and wall of the pool house to reach the outdoor pool. Although this detail was easy enough to execute, the spot where the channel passes through the wall involved creation of a movable acrylic panel that turned out to be the single greatest challenge of the entire project.

The mechanism had to be custom designed, engineered and built from scratch and caused sleepless nights for more than a

Our finish work indoors included installation of the amazing clamshell structure over the swim channel at the end of the pool. Before long, the elaborate tilework drapery was flowing down over the steps, and the hard work began of cutting the coping material to fit a range of radii and complex angles.





In context, this sliding-panel detail between the indoor and outdoor pools fades in comparison to the stunning visuals found elsewhere in this project, but no other element of this huge project involved more blood, sweat and tears than this one, no matter how modest it might seem in context.

few of us who became involved with it.

First, it had to move up and down, retract fully into the wall above and run with mechanisms that had to be completely hidden from view. Second, it had to be sturdy enough to withstand the differential loads from water and bather surge pressing against it on both sides. Third, and most challenging of all, it had to be safe: With such a heavy piece of material moving up and down, we had to devise ways to keep it from trapping anyone beneath it.

On top of all that, it couldn't be a simple up/down, on/off mechanism: Instead, it needed to rise and drop into four positions: all the way down to the floor of the channel; just below the water's surface so the channel could still be navigated while the acrylic still kept the weather and insects out; to a level just above water level; and, finally, all the way up into the wall.

To make it work, we borrowed some technology from automatic pool covers: If it's being lowered and meets any resistance, sensors in the system make the panel rise back up; in addition, constant pressure must be applied to the switch to lower the sheet all the way to the bottom. Finally, it's equipped with triple-redundant internal safety features so it cannot slip out of its track or experience an uncontrolled drop.

Before we reached these solutions, we ran through a host of design iterations and worked with a wide array of engineers and firms – one of which went so far as to build a mock up for us, then told us that they couldn't make it work and actually gave us our money back!

Finally, we linked up with a local ironworks company in Chicago that put us in contact with Bill Petite, a gifted mechanical engineer who came up with a design that met all criteria *and* could actually be built. Even then, we had to sign several "hold-harmless" agreements before they would release the system to us.

The irony is that this is perhaps the least visually obtrusive element of the entire project. As a member of the Aquatech group of builders, I've run into and heard about lots of extremely complicated project features, but neither I nor any of my colleagues had ever run into anything quite so far off the beaten path as this one.



The swim channel isn't the only way to move from outdoors to indoors: Off to one side of the outdoor pool is a sweeping passage that leads to the sauna a few paces away from the indoor pool. This accessway was lined with tilework cave paintings – more handiwork of the artists at Craig Bragdy Design (Denbigh, Wales).

A measure of this complexity is that we spent more than three years from concept to final installation!

Cave Dwelling

Before we step outside to consider the outdoor pool, there was one more set of details we had to attend to within the confines of the pool house: Adjacent to the pool is a set of doors that leads into a foyer that in turn gives access to a large sauna facility.

From floor to ceiling, the transition is finished in tile from Craig Bragdy Design that puts you in the interior of a prehistoric cave dwelling.

As you enter the space, you have the option of going straight to the sauna, or you can make a right turn to an area with steps leading down to a swim-through connected to the outside pool. (Happily for us, the client didn't want another automatic door here: You either wade or swim through an archway that keeps the bugs out with a rain-curtain system.)

Inside the pool house and opposite the archway is a large rock waterfall, so when you enter the space from outside, you're fully surrounded by water as you move toward the sauna and pass by the amazing tiled walls.

Our work in this area was limited to the rain curtain, the wa-

Work on the outdoor pool began while the pool house was still taking shape. Key to success in all subsequent stages was making certain we set things up for plumbing, electrical and assorted other runs – with plenty of extra capacity to accommodate the changes that were certain to come as we moved forward.



terfall and some tile work associated with the swim-out: The general contractor took care of the internal finishes and installed the sauna, with a strong assist once again from Nick Powell when it came to decorative design.

As Powell tells it, he was in a meeting with the owner and the artist who'd done the ceiling painting over the indoor pool when she told the artist she wanted this part of the project to resemble a cave. He worked up some sketches, but apparently they didn't do the trick. She left the room and came back with a silk scarf she'd purchased in Paris that had a design based on authentic cave paintings. She laid it out on the table and said that was *exactly* what she wanted.

Powell took photos of the scarf, returned to Wales and developed a series of sketches based on the configuration of the space. She was finally happy with it, and the artists at Craig Bragdy Design began preparing the third of the four major mosaics they'd ultimately execute for the project. They also fashioned interesting stalactite details and inserted some small windows near the ceiling to bring natural light into the space.

Moving Out

The fourth of the tile mosaics is in the form of a coral reef on the bottom of the outdoor pool – a 65-foot-long, freeform vessel with a vanishing edge, an encircling natural-rock formation, fire features, a waterfall and a sculpture pedestal.

The impetus behind this particular detail stemmed from the client's desire to swim laps starting at the far end of the indoor pool, passing through the swim channel and then moving across the outdoor pool – in all, a circuit of more than 100 feet. But the journey involved making a right turn coming out of the swim channel, so she wanted some sort of visual marker to keep her on track.

The reef mosaic was the elongated solution: It suited her tastes much better than a simple tile lane marker and turned what was otherwise a functional detail into another display of the talents of the artists at Craig Bragdy Design. They'd done something similar in the past, but even with that precedent, the design went through numerous iterations and adjustments of the color scheme before winning the client's approval.

Given the client's indoor/outdoor swimming regimen, both pools had to be heated year 'round. The client had the wherewithal not to care about energy consumption, but she's also environmentally conscious and wanted an energy-conserving solution that would reduce fuel consumption while still enabling her to keep both pools at the same temperature.

To make it work, we installed a geothermal system that pre-heats the water by moving it down a shaft that reaches to the water table beneath the property. There, a heat-exchange process brings the sometimes very chilly pool water up to a reliable 60 to 70 degrees Fahrenheit. When it returns to the surface, this water

The outdoor watershapes involved us in unimaginably complex excavation and forming processes, with intricate contours, interesting angles and a scale so grand that it all defies characterization as a 'residential' installation.





flows to a pair of high-efficiency gas heaters that bring the water the rest of the way up to the desired swimming temperature.

The needs of this system and of all of the other features we were installing led us to a practical choice to make certain we had ample piping service to various outdoor locations.

All of the equipment for the indoor and outdoor systems is housed in the basement of the pool house, which is where we focused our first efforts without having a clear idea of what would be happening outside. All we could do was come up with a best guess about what we'd need – then added several extra runs of conduit and pipe in a 24-inch-wide chase we ran down the side of the supposed length of the outdoor pool.

This was another case where my experience in handling the changing demands of large-scale commercial facilities became a real advantage.

Flood of Details

Indeed, it wasn't long before we were very happy we'd provided room for expansion: After we'd set up and buried the outdoor chase under tons of gravel and concrete, the project evolved to include 16 substantial change orders that called on us to use just about every available line we'd set up. What had been just a swimming pool now became a complex including an outdoor hot/cold therapy spa, a play pool, a waterfall and elaborate fire and lighting effects.

The therapy spa is accessed by a set of steps adjacent to the channel leading into the sauna, the thought being to create an indoor/outdoor therapy zone. The spa's elliptical shape echoes the design of the indoor pool, and it features multiple

Shooting the outdoor pool was a major exercise in logistics, with multiple crews working in various areas around the site until they all came together to take care of the main pool's huge floor. Once the shell was ready, another stunning tile composition was set in place to mark a swim lane running the full length of the 60-foot pool.





With the shells and other basic structures complete, crews came on site to install what seemed like acres of stonework on the pool house and decks – rough boulders, smaller river rocks, flagstone decking and more.



jets as well as tile inlays from Craig Bragdy Design and a pedestal for a piece of sculpture (yet to be selected).

A similar pedestal supporting a mermaid sculpture was added as one of the many changes to the main pool itself. The owner wanted lighting for the pedestal and also wanted water to emerge from the statue's base – not a problem given all the extra capacity we'd built into the plumbing and electrical systems. Also competing for space in the chase were the numerous fire and lighting effects added as the project moved forward.

The main pool features a 20-foot-long vanishing edge into a forest view. The edge is flanked by a sculpture and spills into a catch basin that's 25 feet long and six feet wide.

The basin was much larger and deeper than it needed to be because the homeowner wanted the downslope side of the vanishing edge to serve as a waterfall that could be enjoyed on the level just below the pool. To that end, the system is set up to send a healthy 400 gallons per minute over the edge, creating a sheet of water that cascades into the catch basin. The outsized basin is large enough to handle that robust flow; at the same time, it serves an aesthetic purpose as an architectural pond.

The catch basin itself is finished with a Bluestone facing and coping that matches the edge's finish. All of this serves as a visual extension of the Bluestone flag decking that surrounds part of the pool and the granite field boulders that make up the rest of the coping system as well as the rock waterfall. (The owner also wanted smooth river rocks mixed in with the boulders to accentuate the look she was after.)

We completed the package outdoors with an extensive low-voltage lighting system and six fire features interspersed among the boulders at the edge of the pool.

Final Touches

In reading through this article, you may get the impression that the project flowed smoothly from one phase into another, with all changes and variations handled in stride. Yes, there was a certain momentum that kept things going, but it's important to recognize that just about every detail of this project was the subject of extensive discussion, revision and review.

It was an arduous process, and it took us every one of the 1,800-odd days we spent on the job to get things done in ways that satisfied the client. Let me illustrate that point with one more vignette, this one having to do with choosing the interior finish to go with the reef mosaic for the outdoor pool.

Where choosing the finish for the indoor pool had been straightforward, doing the same outdoors was an ordeal: The client wanted a pond-like look for the water and was extremely concerned about how everything would look. To meet the need, we recommended a custom blend from Southern Grouts &



The sheer volume of plumbing, electrical and other service lines we directed to the large equipment room required the utmost in organization. The success of that effort shows in the orderly precision with which everything came together inside the vault.

Mortars that leaned toward a dark blue-gray.

The client was open to the idea but still needed to be sure. In other words, we had to show her how everything would look underwater.

We took a sample of the finish to a local paint store and had them match it in paint. We then took a big barrel, painted the insides and set up some tile on the bottom to give her a clear sense of how the colors would work together. She was satisfied with what she saw, so we went

ahead – and I’m relieved to say she was thrilled with the result.

But this and other scenarios described above are just a few of *many* such episodes, each of which required us to pull up, figure out approaches, propose solutions and move forward knowing we might have to go back to the drawing board if things weren’t just right.

It was incredibly frustrating at some points, distinctly traumatic at others – but always exciting and unique in our company’s experience. Even at this writing,

we’re still visiting the site on a regular basis to iron out wrinkles, deal with minor requests that have come up and continue to apply various finishing touches.

Although I’d like to think we’re finished, it’s fair to say that this project will likely be a perpetual work in progress on some level. As we have been for the past five years, we’ll be there to make things work.

In an upcoming issue, we’ll take you on a tour of the finished project and share some of its distinctive details.



Five years in the making and likely never to be ‘done’ in the usual sense, this project engaged us on every conceivable creative, practical and logistical level. Snow blankets and conceals the work here, but all will be revealed in a future issue of *WaterShapes*.

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135	Euclid Chemical Co. (pg. 74)
136	Waterco USA (pg. 74)
137	SoundScapes International (pg. 74)
138	Caterpillar (pg. 74)
139	Pentair Water Pool & Spa (pg. 74)
140	Incord (pg. 74)
141	Hanna Instruments (pg. 74)
142	Whitacre Greer (pg. 74)
143	Aquascape (pg. 75)
144	Deck-O-Seal (pg. 75)
145	Outwater Plastics Industries (pg. 75)
146	Ametek (pg. 75)
147	Eon (pg. 76)
148	Ditch Witch (pg. 76)
149	Boral Bricks (pg. 76)
150	Evolution Fence Co. (pg. 76)
151	Miles Metzger Studios (pg. 77)
152	National Swimming Pool Foundation (pg. 77)
153	Urdl's Waterfall Creations (pg. 77)
154	Wolf Steel Ltd. (pg. 77)
155	Quaker Plastic (pg. 77)
156	U.S. Architectural Lighting (pg. 77)

MISSING ANY?

☐ February 1999 (Vol. 1, No. 1)

Tisherman on working in difficult soils; **White** on edge treatments; **Lacher** on expansive soils.

☐ June 1999 (Vol. 1, No. 3)

Phillips on water and decks; **Parmelee & Schick** on soils and geology; **Anderson** on water sounds.

☐ August 1999 (Vol. 1, No. 4)

Anderson on stream design; **Adams** on community waterparks; **Gutai** on spa hydraulics.

☐ October 1999 (Vol. 1, No. 5)

Holden on aquatic-design history; **Mitovich** on dry-deck fountains; **Tisherman** on site geometry.

☐ December 1999 (Vol. 1, No. 6)

Finley on Japanese gardens; a **roundtable** on pools and landscape design; **West** on color rendering.

☐ February 2000 (Vol. 2, No. 2)

Hersman on lighting design; **Macaire** on faux-rock installations; **Andrews** on glass mosaics.

☐ March 2000 (Vol. 2, No. 3)

L'Heureux on project management; **Long** on steel cages; **Forni** on installing and maintaining lakes.

☐ April/May 2000 (Vol. 2, No. 4)

Schwartz on garden access; **Anderson** on streambeds; **Nantz** on watershapes and architecture.

☐ September 2000 (Vol. 2, No. 7)

Davitt on designing for small spaces; **Altvater** on the importance of aeration; **Hetzner** on sheet falls.

☐ November/December 2000 (Vol. 2, No. 9)

Arahuate on John Lautner; **L'Heureux** on stretching laminar flows; **Benedetti** on satellite surveying.

☐ January/February 2001 (Vol. 3, No. 1)

Holden on a retro-look design (I); **Fleming** on upscale approaches; **Gutai** on pump technology.

☐ March 2001 (Vol. 3, No. 2)

Moneta & Farley on site-specific design; **Benedetti** on fiberoptics; **Alperstein** on golf-course water.

☐ April 2001 (Vol. 3, No. 3)

Jauregui on inspired clients; **Dirsmith** on frosty fountains; **Tisherman** on deluxe finishing.

☐ May 2001 (Vol. 3, No. 4)

Reed on sculpture gardens; **L'Heureux** on sequenced water; **Brandes** on restoring riverfronts.

☐ June 2001 (Vol. 3, No. 5)

Winget on fun-inspired waterforms; **Holden** on survey formats; **Schwartz** on classic stonework (I).

☐ July/August 2001 (Vol. 3, No. 6)

Rugg on pond basics (I); **Ruthenberg** on perimeter overflow; **Schwartz** on classic stonework (II).

☐ September 2001 (Vol. 3, No. 7)

Rugg on pond basics (II); **Urban** on energy savings; **Pasotti** on interactive waterplay.

☐ October 2001 (Vol. 3, No. 8)

Tisherman on hilltop views; **Hagen** on natural stream work; **Schwartz** on classic stonework (III).

☐ November/December 2001 (Vol. 3, No. 9)

Straub on Kansas City's fountains; **McCloskey** on the Getty Center; **Tisherman** on Fallingwater.

☐ January 2002 (Vol. 4, No. 1)

Phillips on Hearst Castle's watershapes; **Bower** on the Raleigh Hotel pool; **Roth** on Katsura Rikyu.

☐ February 2002 (Vol. 4, No. 2)

Marosz on project integration; **Moneta** on spa-edge details; **Affleck** on sculpture and water.

☐ May 2002 (Vol. 4, No. 5)

Anderson on pond essentials; **Pasotti** on interactive waterplay; **Gibbons** on 'stellar' fiberoptics.

☐ June 2002 (Vol. 4, No. 6)

Altorio on civic fountains; **Gutai** on skimmers; **Beard** on working with landscape architects.

☐ September 2002 (Vol. 4, No. 8)

Rosenberg & Herman on site-sensitive design; **Dirsmith** on long-term design; **Gutai** on filters.

☐ October 2002 (Vol. 4, No. 9)

Copley & Wolff on modernizing fountains; **Bethune** on imitating nature; **Tisherman** on edgy colors.

☐ November/December 2002 (Vol. 4, No. 10)

Holden on Villa d'Este; **Hobbs** on Maya Lin's watershapes; **Phillips** on water in transit.

☐ January 2003 (Vol. 5, No. 1)

Fleming on high-end ambitions; **Harris** on decorative interior finishes; **Gutai** on surge tanks.

☐ February 2003 (Vol. 5, No. 2)

The **Beards** on collaboration; **Yavis** on custom vinyl-liner pools; **Mitovich** on Microsoft's campus.

☐ May 2003 (Vol. 5, No. 5)

Zaretsky on sensory gardens; **Freeman** on hydraulic retrofitting; **Hanson** on water/stone sculpture.

☐ June 2003 (Vol. 5, No. 6)

Gunn on fountain whimsy; **Tisherman** on watershaping for an art collector; **Holden** on tile.

☐ July 2003 (Vol. 5, No. 7)

Fintel on attracting birds; **Lacher** on structural engineering; **Alperstein** on golf course design.

☐ August 2003 (Vol. 5, No. 8)

Miller on site-specific fountains; **Gutai** on plumbing joints; **Holden** on period-sensitive restoration.

☐ September 2003 (Vol. 5, No. 9)

Hebdon on borrowing naturalism; **Ruddy** on indoor designs; **So** on modernist sculpture.

☐ October 2003 (Vol. 5, No. 10)

Mitovich on dry-deck fountains; **Roth** on liner issues; **Marckx & Fleming** on installing glass tile.

☐ November 2003 (Vol. 5, No. 11)

Holden on carved stone; **Shaw** on roles of consultants; **Forni** on period-sensitive renovation.

☐ December 2003 (Vol. 5, No. 12)

Five-year **article and topic indexes**; five-year index for all **columns**, 1999-2003.

☐ January 2004 (Vol. 6, No. 1)

Ruddy on enclosures; **Lacher** on steel and concrete; **Forni** on water quality for natural watershapes.

☐ February 2004 (Vol. 6, No. 2)

Varick on nature and architecture; **Benedetti** on protecting stone; **Kaiser** on grand-scale watershapes.

☐ March 2004 (Vol. 6, No. 3)

Morris on kinetic sculpture; **Cattano** on collaboration; **Hebdon** on water and settings for healing.

☐ May 2004 (Vol. 6, No. 5)

Rowley on main-drain safety; **Ewen** on purposeful restoration; **Dallons** on high-wire watershaping.

☐ June 2004 (Vol. 6, No. 6)

Dallons on a hilltop treasure; **Mitovich** on the D-Day Memorial; **Slawson** on Japanese inspiration.

☐ July 2004 (Vol. 6, No. 7)

Benedetti on fortifying concrete; **Shaw** on fountain 'standards'; **Holden** on Italy's watershapes.

☐ August 2004 (Vol. 6, No. 8)

Bravo on Olympic-scale restoration; **Martin & Tester** on water and music; **Jauregui** on clients and styles.

☐ September 2004 (Vol. 6, No. 9)

Abaldo on a grand-scale vision; **Gutai** on valves; **Lennox Moyer** on principles of lighting water.

☐ October 2004 (Vol. 6, No. 10)

diGiacomo & Holden on watershaping's role; **Allen** on integrated spaces; **Grusheski** on a river's history.

☐ November 2004 (Vol. 6, No. 11)

Abaldo on grand-scale detailing; **Freeman** on water-chemistry ABCs; **Hughes** on naturalistic design.

☐ December 2004 (Vol. 6, No. 12)

Revisiting 25 projects that define **The Platinum Standard** in watershaping.

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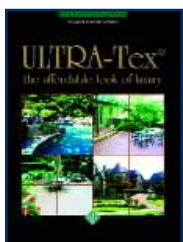
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CONCRETE SURFACE FINISH

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EUCLID CHEMICAL CO. offers Ultra-Tex, a thin, cementitious, decorative overlay for concrete surfaces that uses pigments and a template system to create the look of real stone, slate or tile. Designed for indoor or outdoor use on both horizontal and vertical surfaces, it is available in a virtually unlimited range of colors and provides a surface that is slip-, salt- and UV-resistant. **Euclid Chemical Co.**, Cleveland, OH.

CENTRIFUGAL PRE-FILTER

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WATERCO USA has introduced the Multi Cyclone, a pre-filtration device that has no moving parts to wear out and no filter media to clean or replace. Using the principle of centrifugal water filtration, the device guides incoming water to a diverter plate so it enters multiple cyclones tangentially. This spins sediment to the wall and then spirals it down to a sediment sump for easy purging. **Waterco USA**, Augusta, GA.



TUNEFUL SCULPTURES

Circle 137 on Reader Service Card



SOUNDSCAPES INTERNATIONAL offers a line of outdoor acoustic sculptures called Wind Harps. When breezes blow, they generate harmonic tones that encourage relaxation, contemplation and sublimely regenerative experiences. Ideal for placement in ponds and other calm, quiet watershapes, the Klarion model stands 53 inches tall and has a durable powder-coated finish. **SoundScapes International**, Pagosa Springs, CO.

SMALL-WHEEL LOADERS

Circle 138 on Reader Service Card

CATERPILLAR has introduced the H-Series of small-wheel loaders. Designed for responsive power and versatility, the three low-emission, low-noise models each have more engine power than the company's previous small-wheel-loaders and feature cabs and operator stations designed for easy access and efficient operation with nominal bucket capacities ranging from 2.2 to 3.25 cubic yards. **Caterpillar**, Peoria, IL.



CONTROL SYSTEMS

Circle 139 on Reader Service Card



PENTAIR WATER POOL & SPA has introduced the SunTouch and SunTouch Solar control systems. Designed as entry-level devices, SunTouch allows the programming of a pool, a spa and two additional features – a cleaner and a light, for example – while SunTouch Solar is specially designed to monitor and adjust both the flow and temperature for solar-panel applications. **Pentair Water Pool & Spa**, Sanford, NC.

ROPE AND NETTING

Circle 140 on Reader Service Card

INCORD has published literature on its rope and netting systems for waterparks and waterplay areas. The eight-page, full-color brochure covers soft-play netting for climbing and tunnels; rope and barrier netting for fences; Netform, a steel-reinforced rope; Navy Flex, a long-life, low-abrasion polypropylene rope; and a UV/chemical-resistant polyester netting that's ideal for high-activity waterplay areas. **Incord**, Colchester, CT.



CHLORINE ANALYZERS

Circle 141 on Reader Service Card



HANNA INSTRUMENTS offers the PCA Series of chlorine monitors and analyzers. Available in three models (two with pH electrodes and one with an ORP electrode), the devices check for free and total chlorine levels and proportionally control the pH level. The wall-mounted units feature large, backlit displays and user-friendly interfaces and store up to 3,500 data points. **Hanna Instruments**, Woonsocket, RI.

CLAY PAVERS

Circle 142 on Reader Service Card

WHITACRE GREER offers clay pavers in a variety of colors, finishes and sizes. Produced using a vacuum dry-press method, the durable products come in 13 colors from ivory to tangerine and chocolate; with beveled, rolled, straight or cobbled edges, with or without lugs; and in eight sizes from 3-by-9 to 8-by-8 inches, with all sizes coming in two thicknesses and the 4-by-8s in three. **Whitacre Greer**, Alliance, OH.



WATERFEATURE BASE

Circle 143 on Reader Service Card



AQUASCAPE has added the AquaBasin to its line of backyard products. Designed to support up to 2,000 pounds to handle heavier items such as basalt or slate columns, large ceramic urns and concrete, carved stone or metal sculptures, the device is made of black high-density polyethylene with double-wall construction in an octagonal shape. It installs easily and holds 75 gallons of water. **Aquascape**, St. Charles, IL.

DECK-DRAIN SYSTEM

Circle 144 on Reader Service Card



DECK-O-SEAL offers Signature Series Redwood, a line of drains, joints, drain replacement tops and expansion-joint caps that enhances projects with the look of wood. Featuring ultraviolet stability, exceptional durability in outdoor environments and superior chemical resistance, the products retain their color and mechanical properties with long exposure to sunlight, moisture and heat. **Deck-O-Seal**, Hampshire, IL.

STONE TILES

Circle 145 on Reader Service Card



OUTWATER PLASTICS INDUSTRIES offers Genuine Stone tiles made up of natural material hand-sorted by color, size and thickness and then individually affixed in mosaic or stacked patterns onto mesh-style backings. The process results in seamless, interlocking 12-by-12- and 4 by-12-inch tiles that are easy to install using traditional masonry methods, materials and tools. **Outwater Plastics Industries**, Bogata, NJ.

COMMERCIAL SPA BLOWERS

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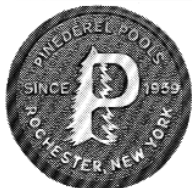


AMETEK offers Rotron Regenerative Blowers for commercial spa applications. Available in five models (DR 404, 454, 505, 513 and 656) operating at between 105 and 278 scfm, the heavy-duty devices feature cast aluminum blower housings, covers and impellers, permanently sealed ball bearings and cast iron flanges along with inlet and outlet muffling that allows for operation within OSHA standards. **Ametek**, Kent, OH.

Continued on page 76

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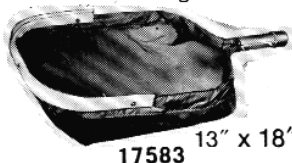
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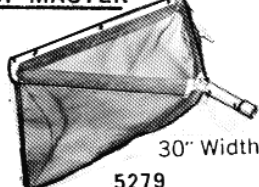
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OUTDOOR FURNISHINGS

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EON has introduced its Adirondack Collection of plastic outdoor furnishings. Suited to use in backyards, patios and decks, the ten-piece, all-season collection is designed for low maintenance, durability and long-term beauty with the feel of natural wood. Available with white or cedar finishes, the line includes classic Adirondack chairs, ottomans, side tables, storage boxes and screens. **Eon**, Toronto, Ontario, Canada.

TRENCHER SYSTEMS

Circle 148 on Reader Service Card

DITCH WITCH has introduced the Zahn family of trenching devices. Available in three models with compatible front ends, the line includes the R150, designed for power, productivity and speed; the R230, which comes in two- and four-wheel versions and is designed for extremely versatile performance; and the R300, also in two versions, one of which accepts seven different front-end tools. **Ditch Witch**, Perry, OK.



BRICK VENEER

Circle 149 on Reader Service Card



BORAL BRICKS offers Thin Brick for indoor and outdoor applications. Designed with the look and feel of an oversized, handmade brick (but in a 3/4-inch-thick, easy-to-install form), the material comes in through-body colors ranging from grey-taupe or traditional red to rustic brown or caramel-grey. Great for outdoor fireplaces, the units install like other veneers on almost any surface. **Boral Bricks**, Atlanta, GA.

POWDER-COATED PERGOLA

Circle 150 on Reader Service Card

EVOLUTION FENCE CO. has added a new pergola to its line of ornamental, powder-coated aluminum fencing products for residential and commercial applications. The units stand 7 feet, 6 inches tall and have standard 3-by-7-foot tops (with custom spans available). Designed to fit seamlessly into projects using the company's fences, the system offers a truly custom look. **Evolution Fence Co.**, Hauppauge, NY.



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BRONZE SCULPTURES

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MILES METZGER STUDIOS has published a catalog on its line of bronze sculptures. The 16-page, full-color brochure covers pieces for installation in landscapes and fountains, including studies of marine mammals, creatures of the forests and meadows, human figures and more. The limited-edition works are available in a range of scales, from small to larger than life. **Miles**

Metzger Studios, St. Helena, CA.

ARTIFICIAL LEDGER

Circle 153 on Reader Service Card



URDL'S WATERFALL CREATIONS has added ledger rocks to its line of fiber-reinforced concrete products. Designed to complement the company's rock panels for waterfalls and landscapes, the rocks are available in a standard

tan/brown or in custom colors and were molded using an Alabama stone. They have a flagstone texture but are larger and thicker than typical flagstones. **Urdl's Waterfall Creations**, Delray Beach, FL.

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SWIMMING BOOK

Circle 152 on Reader Service Card



NATIONAL SWIMMING POOL FOUNDATION has sponsored publication of *Swimmers: Courage and Triumph*, an inspirational collection of 19 stories about swimming from the familiar (Mark Spitz and his seven Olympic gold medals) to the relatively unknown, including those of disabled persons who know swimming's the key to unlocking healthier and happier lives. **National Swimming Pool Foundation**, Colorado Springs, CO.

OUTDOOR GAS FIREPLACE

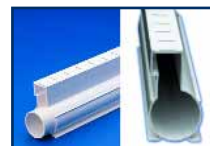
Circle 154 on Reader Service Card



WOLF STEEL LTD. has introduced the Napoleon GSS42, a 42-inch-wide gas fireplace that comes complete with brushed stainless steel double doors, heat-radiating ceramic glass, traditional cast iron andirons and optional decorative brick panels. The unit generates up to 65,000 Btus and requires no venting, so it can be installed almost anywhere outdoors with zero clearance. **Wolf Steel Ltd.**, Barrie, Ontario, Canada.

DECK-DRAIN SYSTEM

Circle 155 on Reader Service Card



QUAKER PLASTIC has introduced Deck-Drain A-Way System II. Designed to move 17 percent more water than regular deck drains, the system is a full 3-1/2-inches high by 1-1/4-inches wide and comes in gray, white or tan. No deep trenches are required, and the system adapts to all standard 1-1/2-inch plastic fittings. It also serves as an expansion and contraction joint and a screed guide. **Quaker Plastic**, Mountville, PA.

LIGHTING DESIGN BOOK

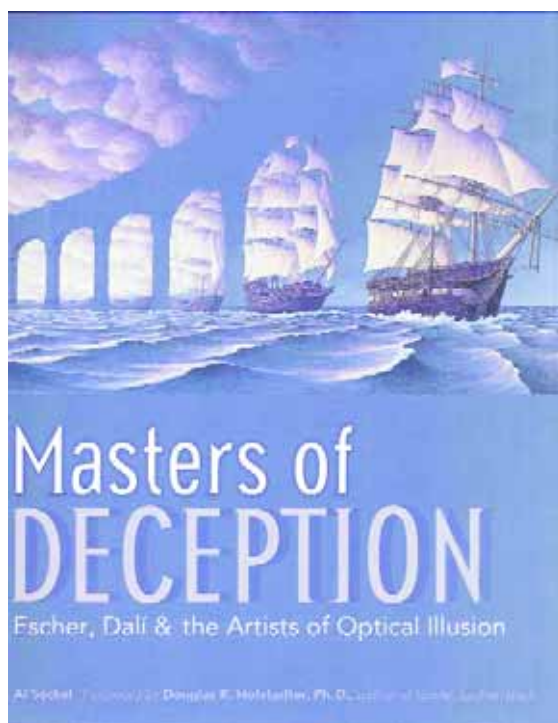
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U.S. ARCHITECTURAL LIGHTING has published the Trilux Lighting Design Book, a 100-page, full-color book/compact-disk package on the Trilux line of modular outdoor lighting fixtures. Featuring extensive photography and detailed product information, the literature highlights the interchangeability of fixtures and a range of mounting options, finishes and color choices. **U.S. Architectural Lighting**, Palmdale, CA.

By Mike Farley

Meeting the Eye



Although we might not commonly think of watershaping and exterior design in this way, a great many of the details we shape are designed to fool the eye or somehow create illusions. Consider the pools that are made to appear so natural that they don't seem to have been man-made – or vanishing edges that conjure the impression that there's no visual boundary between the surface of a swimming pool and a distant body of water.

Those are two familiar tricks of the trade, but if you stop and think about it, there are many less-obvious examples as well: water flowing under a bridge that leads to nowhere; rocks half buried in the landscape to give the illusion that they are part of a subterranean geological formation; small bits of individual tile that come together to form a mosaic image; or modular walls that appear to float in space.

In my own work, to add another example, I've started to be deliberate about working with phenomena such as forced perspective, making seemingly rectangular pools narrower on one end to give the impression that they're longer than they really are – and I've done the same thing with pathways.

In other words, we often find ourselves in the business of creating false impressions – which is why I recently gravitated toward a copy of *Masters of Deception: Escher, Dali & the Artists of Optical Illusion* by Al Seckel (Sterling

Publishing, 2004). At first glance, this 300-page book might seem to have little to do with watershaping or landscape design. After all, it examines the work of two-dimensional artists who use visual trickery to delight, confuse and even frustrate viewers: These are artists who, unlike us, are not constrained by inconvenient realities such as gravity, volume, mass or literal representation.

Yet the deeper I delved into this book, which is all about things that are not what they seem, the more I accepted the fact that artists such as Salvador Dali, M.C. Escher, Jos De Mey, Sandro Del-Prete, and Shigeo Fukuda (included among the 20 featured in the book) have something to teach us despite the fact I see no direct way to transfer their boldest ideas to our work.

For starters, studying the works of these artists makes sense because we have a need to be familiar with significant artistic genres (including these optical illusionists) of which our clients may be fans. In this particular case, there's fantastically broad popular appeal, with just about everyone seeming to get a kick out of things that fool the eye.

Moreover, in terms of simple design inspiration, the bag of visual tricks represented in the book goes a long way toward explaining how perspective, form, geometry and imagery can be used to create impressions and illusions. I don't see using these concepts in overt ways, but I have the immediate sense that they are already informing the subconscious part of my creative process and are helping me perceive my designs in new ways.

Also, there's no escaping the fact that it's great fun to look at the works of these artists and learn about how they arrived at their various approaches. At the very least, it serves to remind us that although design can be a very serious matter, it also can and should be about fun and fascination as well. **WS**

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



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