

Inside: David Tisherman on Placing Boulders

WATER SHAPES

Design • Engineering • Construction

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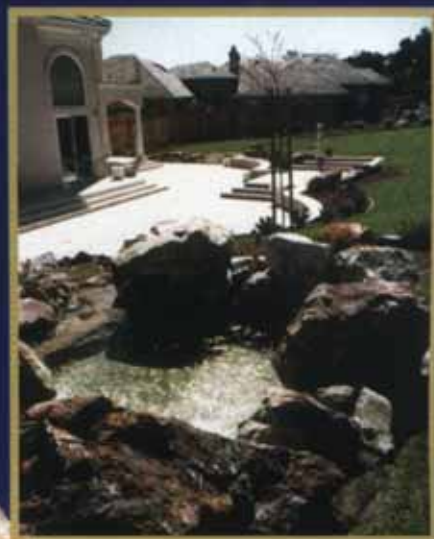
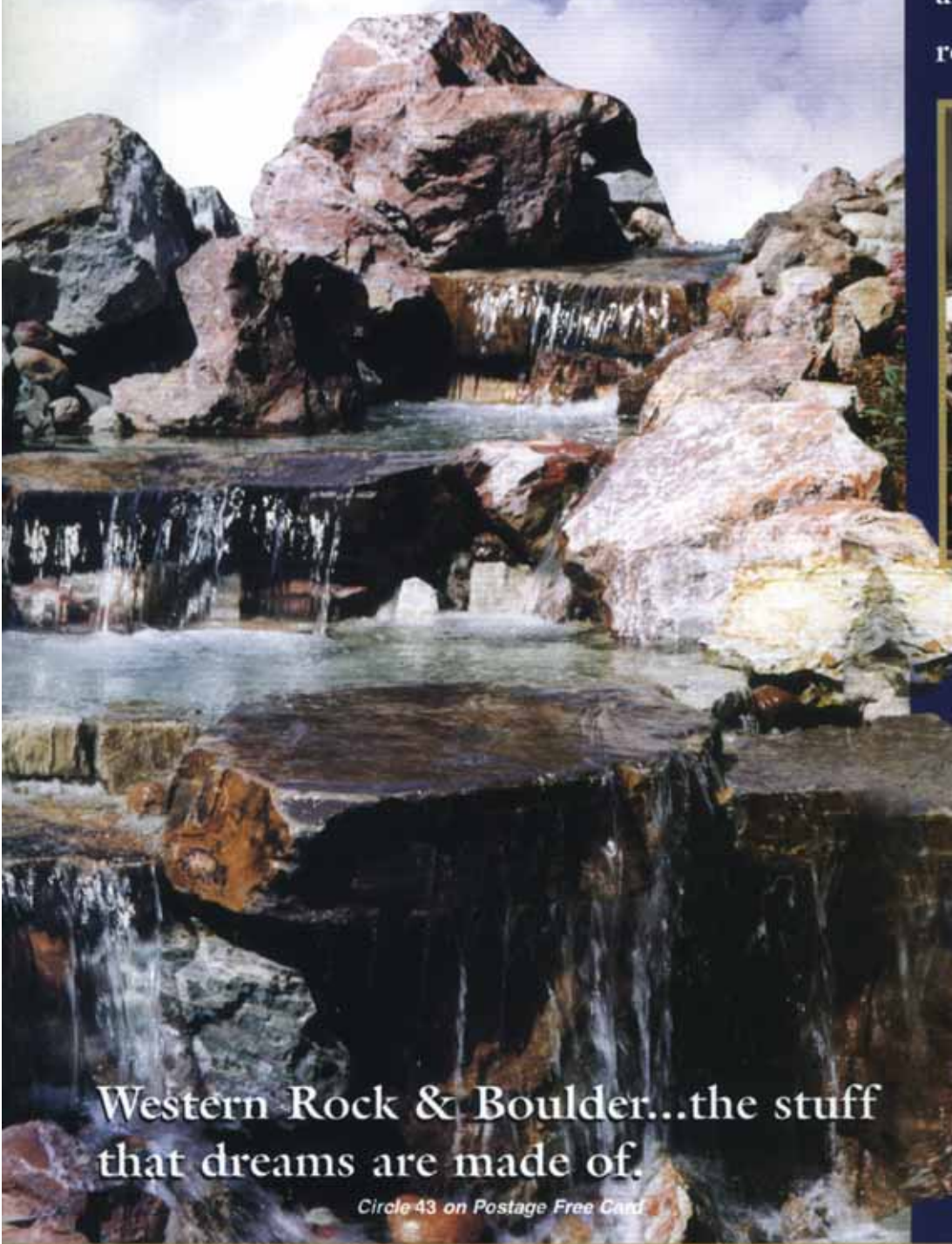
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Photo by Jim Lampl,
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For All You Know

I'd humbly like to add my own voice to the growing list of those who are encouraging watershapers to seek payment not just for what you do, but also for what you know.

A perfect example of what I mean is found in "Natural Intuitions," the article by Jim Lampl found on page 24 of this issue. A landscape contractor who uses water in every single one of his projects – whether it's just a small waterfeature or a full-blown swimming pool – Lampl approaches the work with an informed and distinctly artistic sensibility based on his background in visual expression and landscape design. To my eyes, his projects are truly works of art.

The thing that impresses me most is that his watershapes are just water with rocks and plants and the occasional waterfall – bread-and-butter stuff. He doesn't go in for attached spas, waterslides, fancy lighting, special tile or elegant surface materials, and I firmly believe that his simple palette testifies to the potential of *every* watershape, from mid-range jobs for middle-class folks to decked-out masterpieces for mansions on the hill.

At all levels, I believe that what separates the artists from the average achievers is creativity: It's not the elements themselves that make the watershape; rather, it's the way they are applied in the context of the design.

I've heard it said that it takes time (often, *too* much time) to be creative – and that time equals dollars. That's a good point, so I would think that time spent in designing and creating is work for which you should be paid, whether you get it done on paper in a distinct design phase or do it on site in placing rocks and plants in the construction phase, as does Lampl.

Either way, the fact that you are applying knowledge and skill your clients do not have is something that should add to your margin. Does charging for creative work jack up the price of a mid-range pool and cut out certain dollar-conscious clients? Probably, which is why there will always be a place in the market for those who design watershapes in living rooms for free, right before the customers' eyes.

But I'd be willing to bet that, more times than not, charging for creative work demonstrates to clients that the design process itself has value. It's a process that frees you to exchange ideas with your prospects and enables them to be part of decisions that will be made. It's a process that enables clients to become more excited by the possibilities and to strive for greater beauty and long-range satisfaction than is the case if a design is pulled from a template book and done up in an afternoon.

Yes, high-end custom builders have budgets that enable them to stretch the envelope when it comes to structural features and materials of construction, but if Lampl and others have anything to teach us, it's that simple elements such as rocks, plants and water are *more* than enough to create places of great beauty and interest if the watershaper brings his or her own talent and know-how to bear.

If there's a lesson here, it's that creativity and experience are the most valuable assets a watershaper can possess – and sell.



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IN THIS ISSUE

OCTOBER'S WRITERS

Jim Lampl grew up in the landscaping trades. His father founded the family business in 1955, then purchased a small farm in Allison Park, Pa., in 1960 and transformed the site into a nursery. In 1972, Jim Lampl graduated from Pennsylvania State University with a degree in landscape architecture and went on to join the Peace Corps. Following extensive travel abroad and a three-year stint in the West African nation of Ghana, Lampl returned home and rejoined the family business. He soon became the principle creative force in the firm's custom designs, most of which include watershapes ranging in scale from small streams to large swimming pools. A lifetime student of the

fine arts and exterior design, Lampl's work reflects his particular love of Japanese gardens and of detail in landscape design and installation.

Barton Rubenstein is a sculptor and sole proprietor of Rubenstein Studios in Chevy Chase, Md. Before developing his artistic medium, which he calls "water and kinetic sculpture," Rubenstein studied physics and mathematics at Haverford College in Pennsylvania and later at the Weitzman Institute of Science in Rehovot, Israel. After returning from Israel, he turned to art and began developing his distinct sculptural style. In the past five years, he has created works for a



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variety of public and private clients, mainly in the eastern United States.

Rick Anderson is a watershaper with Mulhall's, a full-service landscape design and installation firm in Omaha, Neb. A designer and artist with more than 22 years of professional experience, Anderson's work focuses on the use of natural materials, particularly stone, in naturalistic settings. He is the founder of The Whispering Crane Institute, a landscape design "think tank" dedicated to exploring our physical, emotional and spiritual relationships with the land. Anderson is a past director of the Association of Professional Landscape Designers and has

contributed numerous articles to a variety of trade and consumer magazines.

Rodger Embury is president of Rock & Water Creations in Fillmore, Calif. A retired Los Angeles firefighter who got his start in the watershaping industry 25 years ago, he initially worked part-time between shifts at the fire station. Since then he has traveled the world over, designing and installing rockwork in commercial and private watershaping projects. Once purely a faux-rock contractor, Embury's firm has recently entered a new phase and is now manufacturing rock panels and training contractors how to successfully install the products on their own.

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Bidding On Value

By Brian Van Bower

I'd like to bring up an old observation of mine: In looking at the high-end watershapes that win awards or achieve some sort of public acclaim, it seems to me that the designs are increasingly coming from outside the mainstream pool and spa industry.

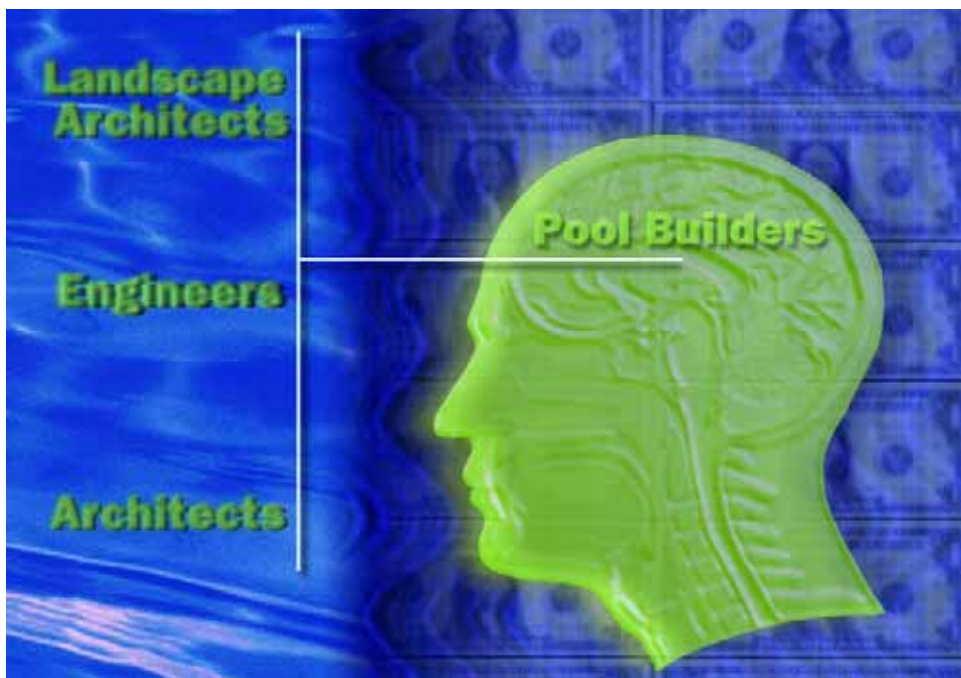
This is just a strong impression, and I don't have any statistics to back up my case. But when I look around me and see who's doing the most celebrated work, I find that the designs have been done by architects, landscape architects and even engineers rather than pool builders.

And I'm talking about high-end pools, the kind that make real statements about the nature and craft of watershaping. That end of the business seems to be flowing away from pool builders and toward creative forces in other sectors.

I'm not trying to be divisive here. I know I write for a magazine that's trying to break down barriers between all watershapers rather than maintain them. But as a professional with deep roots in the traditional pool/spa industry, I must ask the question: Why is it that so many professionals from *other* branches of the contracting and construction industry are garnering so much of the watershaping work, credit and (presumably) revenue?

DOWN TO DOLLARS

As I weigh that question in my own mind, I find myself reaching only one conclusion: Watershapers from the rank-and-file pool industry are continuing to undervalue their own products – and often do so at the expense of good design. As a result, people who probably don't know as much as they should about the nuts and bolts of pool construction are stepping in and filling the void.



Why is it that so many professionals from *other* branches of the contracting and construction industry are garnering so much of the watershaping work, credit and (presumably) revenue?

The interesting thing is that this is all about *money* – but not in the way most people usually think.

For all of our high-minded discussions of design, integration with the environment and raising the bar in recent years, the “bottom line” is often the bottom line. The hard fact is there's a strong correlation between professionals who charge an adequate amount of money for their work and those who find themselves in a position to extend the state of the art with respect to creativity and excellence.

Ironically, this broad undervaluing of design work on the part of many

low-end and mid-range pool builders comes from a myopic concentration on costs. This really bothers me: In thinking mainly in terms of cost, mark-up and margin, the pool/spa industry has for years doomed itself to the "make a nickel on a buck" mentality.

This results all too often in under-priced bids and a lackluster design sensibility – and leaves the door wide open for creative people in related trades to sweep in and fill the ever-broadening demand for innovative, expressive watershape designs.

You could drive yourself crazy with a sort of "chicken or egg" discussion about what comes first – good design or adequate compensation for good design. The way I see it, however, that debate is beside the point because the only way to expand clients' budgets is by expanding their thinking. And the only way to free yourself to expand your creativity and provoke that thinking is to be paid for what you know.

In other words, good design and good pay go hand in hand, no matter which comes first.

The pool-builder side of the watershaping industry seems to be moving in the right direction, but the pace of change has been glacial. In fact, if I were to offer a "state of the industry" assessment, I'd say that the ship has been righted, the sails have been repaired, a steady hand is on the tiller and the wind's blowing in the proper direction – but we still have a *long* journey in front of us.

ARCHITECTS OF CHANGE

How we react to the fact that architects and other designers are exploring the watershaping realm with greater frequency than ever before is crucial.

Some may be tempted to fear this competition because it comes from people with all sorts of degrees and credentials. A better way to view the increased involvement of high-end,

credentialed designers is to accept it as evidence of the power and value of stretching and reaching for greater levels of design artistry and engineering expertise within the watershaping industry – and then to make a personal commitment to keep pace with the trend.

Using my own work to illustrate that second path, let me start by saying I've seen a *huge* increase in inquiries and requests for designs from architects and landscape architects. As I've pushed myself to elevate the value of what I do (and the dollars I require), I've sensed increasing acceptance on the part of architects. In fact, many have granted me a place at the partnering table and have become valued allies rather than intrusive competitors.

Lately, for instance, I've been collaborating a lot with a highly regarded South Florida architect. He has no shortage of ego: In the early stages of our working relationship, he actually



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went so far as to tell me not to talk directly with his clients. He didn't know me that well and obviously did not trust me to speak to his clients "in an appropriate fashion."

Rather than let that bother me (too much, anyway), I decided to let my work and my knowledge of architecture and design do the talking. Eventually, we had a couple of key personal breakthroughs in our relationship (one involving some good food and wine) to the point where he now trusts me implicitly and even sells my involvement as a benefit to his clientele.

It took a while, but he's gone from wanting to hide me to selling the fact that he has ready access to a top-notch watershaper.

INSIDE THE LEARNING CURVE

There's another side to this story. I'm at the point in my career where I've now shifted toward the design side and tackle more consulting roles – and now find myself on the inside track on many high-end jobs. This has placed me in a very interesting position when it comes to assessing what happens when a price-minded pool builder steps up to the plate in the big leagues.

Not long ago, I designed a high-end custom project for a waterfront property in an area just north of Boca Raton. This was killer stuff: a 10-by-90-foot fountain out front with a 360-degree perimeter overflow and adorned with statues and custom lighting (and that was just the entry!) as well as a 100-foot pool overlooking the ocean. The pool has a unique center-shallow design, and the adjoining perimeter-overflow spa is finished completely in tile. Surrounding the pool are several platforms with great landscaping and statuary, and the topper is a spectacular fountain with 42 separate jets (each with an individual fiberoptic light) right on the waterfront.

After completing the design, I was asked along with several other pool contractors to submit a construction bid. Mine came in at \$360,000, and I was pleased to see that *some* of the bids were in the same ballpark. (It's good to know that there are people out there who understand what's involved in these kinds of projects and have the courage to bid accordingly.)

Because I was a consultant on the project, I was privy to the bids as they came in – and was shocked by what I saw in a couple of the *other* bids: The bidders just didn't have a clue. The contractor who got the nod came in a good \$100,000 below my bid – and he wasn't the low bidder!

Even for the wealthiest of clients, it seems that a six-figure savings is a hard thing to pass by – even though I urged the general contractor to go with a more experienced builder. Having designed the job, I knew for a cold fact that there was no way the job could be done for \$260,000 or even \$300,000 – and I was right.

The winning bidder now concedes that he didn't know what he was getting himself into and certainly will lose money on the job.

In all fairness, what this contractor is going through is not entirely a bad thing – although even the best education isn't worth going broke. Still, as I just mentioned, he learned a valuable lesson about bidding. He also gained the experience

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of working at a very high level – an investment of time and effort that will probably come back to him several fold in the future.

BREAKING NEW GROUND

As I see it, this well-meaning contractor fell victim to a limited view of the work and the value to be placed on it.

That's what it's all about: There is real value in stretching what you do and placing yourself in new situations.

I remember, for instance, the first time I ever showed one of my drawings to a client. I was nervous, and for good reason: I was asking to be paid for doing something that was fairly new to me. Still, that kind of pressure forced

me to extend my reach and to grasp for increased levels of performance.

I continue to find myself in situations even today where I get those quivering feelings, situations where the outcome is somewhat uncertain. For several months, for example, I've been involved in an extremely high-end residential project – even grander than the one I just described. I was brought in by an architect who had done what so many architects do in planning watershapes – he'd drawn a blue smudge on a site plan.

When I took a closer look, I really didn't like what I saw either with respect to the design or the engineering. For starters, the trough on the vanishing edge was grossly undersized. I spoke my mind and was asked by the architect to step and rework the design in a way that I thought reflected the client's desires – and would work properly once installed.

When I sat down at the fateful team meeting to tell everyone what I thought, I was really keyed up. I knew that the changes I would be suggesting would affect other parts of the program – the width of a beautiful waterfront walkway and several other structures. Fortunately, because I was a member of the design team, my opinion was greeted with respect and open minds.

ILLUMINATING STEPS

I was on safe technical ground in this case, but there was another part of the project that pulled me into an area where I really didn't have much business rendering an opinion. Among other things, the job includes three spectacular waterfeatures that include wet walls: Water flows down across beautiful stone into a trough and then flows through glass walls into other troughs.

As work has moved forward on these three features, the architect has involved me in discussions of their lighting design, and I found myself hearing terms such as *foot candles* and *lumens* that were only vaguely familiar. This portion of the job is going on right now, and the current plan is to install

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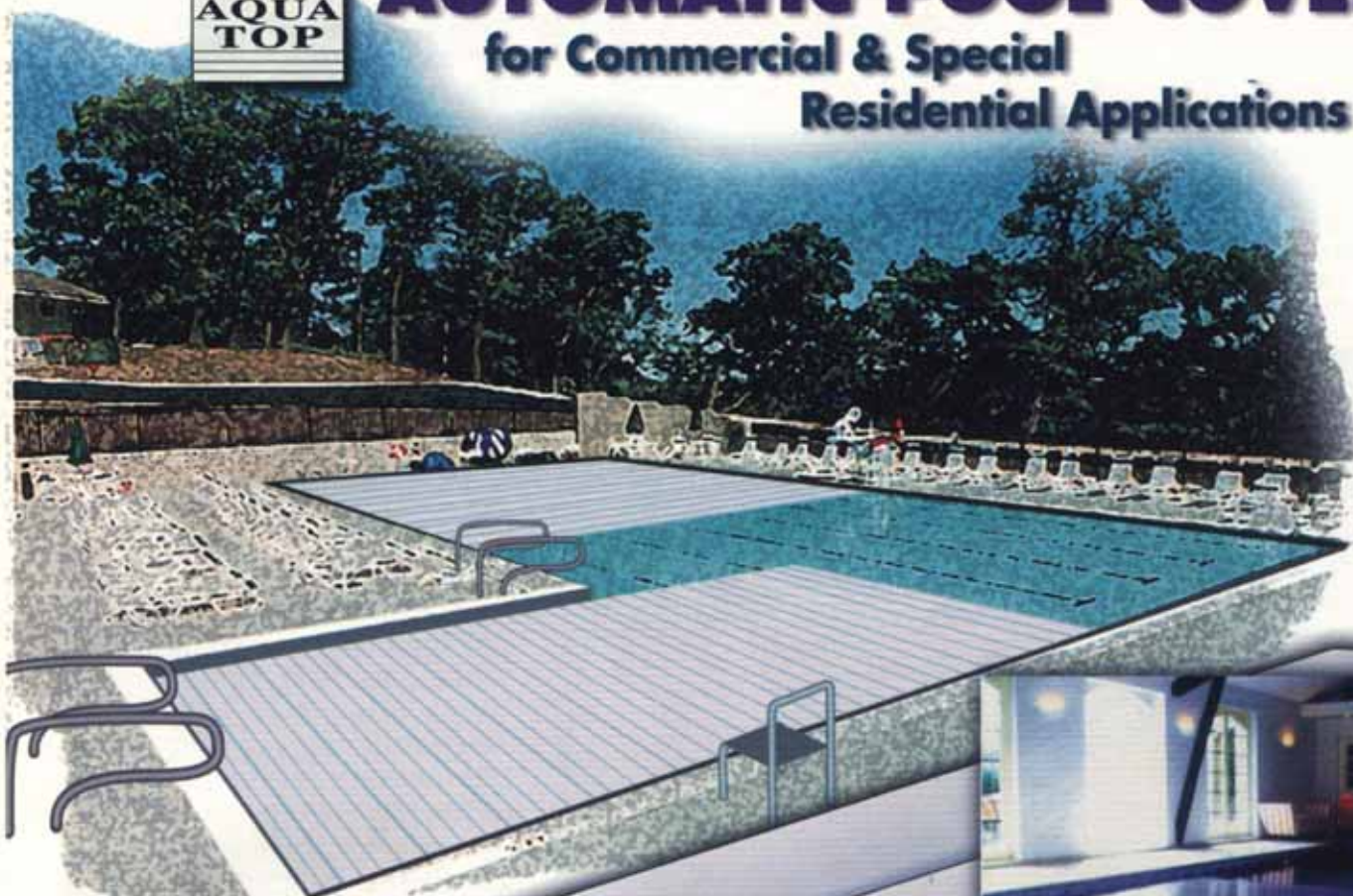
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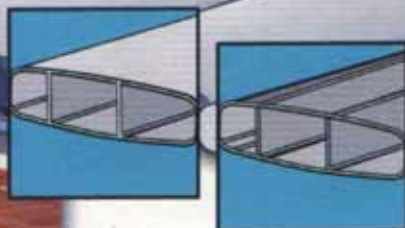


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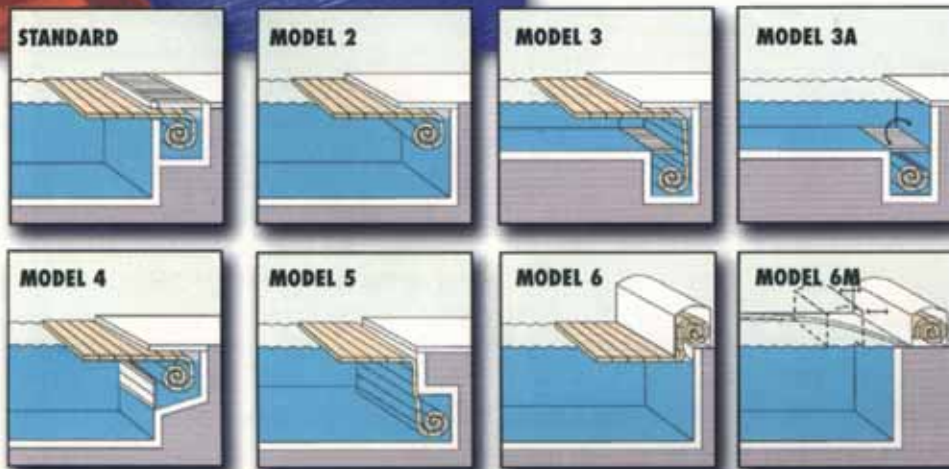


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It's all fascinating and spectacular stuff, but the bottom line is that I don't know much about any of it. So I contacted designers I knew at Crystal Fountains in Canada who *do* know about these things and picked

their brains. They've been a tremendous help – and the experience has encouraged me to do everything I can to develop my technical knowledge in this area.

I know that the next time I get involved in discussions about lighting schemes, I'll damn well be better prepared to participate in the discussion.

The kind of experience and learning that goes on when you're involved in high-end projects like this is not something that can be quantified and marked up. Rather, it's all part of the rich experience that comes when you put yourself in positions that cause you to stretch your knowledge and your abilities.

Before you can get to a place where you're comfortable with challenging and (at times) uncertain situations, you've got to free yourself from the notion that everything you sell is to be marked up by a certain percentage. Truth is, on many jobs where the water-shape is considered an integral part of the environment (as opposed to a free-standing clump of concrete, steel and plumbing), it can be almost impossible to know exactly what kind of margin you're earning.

This brings us full circle to the overall concern about value and pricing: When you charge fees based on what you know rather than quantities of material, equipment and labor spent installing something, then you will be earning enough money so that you don't have to account for every nickel and dime.

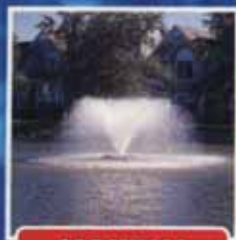
And the thing is that all of this applies not just at the high end, but also to midrange projects, where budgets are important to everyday working folk. Creative design principles can be applied across a wide range of projects, whether you're building \$40,000 pools or \$400,000 paradises. Your creativity and expertise add value to the work, and that translates directly into dollars no matter the economic profile of your clientele.

In other words, charge what you're worth. You'll improve your bottom line, and you'll also enhance your status as a design/construction professional.

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

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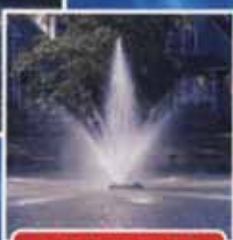
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Considering the Truly Unusual

By Stephanie Rose

This past summer, I had the pleasure of traveling to Europe – specifically Northern Italy and Southern France. Along the way, I was lucky enough to see the lavender fields of Provence in peak bloom and many unusual and beautiful gardens. My travels were particularly rewarding in the region around Lake Maggiore in Northern Italy, well known for having some of Europe's most beautiful gardens.

We started off by visiting the islands on the lake and their villas, complete with their classic-style gardens. The climate of the area allows for growing many of the plants I'm familiar with in Southern California, but the styles of the designs are much more formal and controlled compared to what is normally requested back home.

SOMETHING DIFFERENT

We visited a large garden bordering the lake in a town called Pallanza. Known as the Villa Taranto, the garden houses many exotic plants, some of which you would not expect to grow in an area where it snows and winter temperatures dip well into the freezing zone.

Villa Taranto was originally started in 1931 when Captain Neal McEacharn bought the property with the intention of turning it into the most exotic botanical garden in the world. He proceeded to bring in plants from all over the world, acclimatizing them (with much success) to grow in this unusual setting.

Embarking on our tour of the gardens, we expected to see plants we couldn't identify or that looked quite different from anything we knew. We were disappointed at first, seeing lots of petunias, roses, dahlias and other "garden variety" plants. But turning the corner at the end of a long path, we spotted a greenhouse that seemed from a distance to be empty. Wandering over, we were shocked (and pleased) to find a large greenhouse filled with one of nature's most fascinating wonders: Amazonian Water Lilies.



The climate of the area allows for growing many of the plants I'm familiar with in Southern California, but the styles of the designs are much more formal and controlled.

Victoria amazonica, known traditionally as the Giant Water Lily or Water Platter, was discovered in Bolivia in 1801. The largest of all the water lilies, each of its leaves can grow to seven feet in diameter with upturned edges to eight inches high. The plants bear flowers 18 inches across. Strictly nocturnal, they open only at night – and only last for two successive nights.

In the mid 1800s, this plant drew a tremendous amount of attention, resulting in special events and receptions to view it. In fact, the Missouri Botanical Garden saw a full one-third increase in atten-

The scale of these Amazonian Water Lilies is a bit hard to grasp. Mature specimens can grow to seven feet in diameter, and their upturned rims may rise as high as eight inches out of water. It's easy to see why their discovery nearly 200 years ago caused such a sensation — and why they are so enduringly popular.

dance in 1894, the year it was lucky enough to have specimens of these plants on display.

The flowers of the Giant Water Lily give off a strong fruity scent much like ripe pineapple. (It is said you can smell the flowers from 30 feet away or more.) The plant has also been known to produce as much as two quarts of seeds from one flower; the seeds are highly nutritious and are considered a delicacy by native populations.

On top of all that, the plant also is known to grow up to eight inches in diameter in a single day. (This brings to mind Audrey in *Little Shop of Horrors*:



So far, however, I'm happy to report that nobody has ever been swallowed by a water lily.)

The underside of the leaves are heavily veined and covered with sharp spines, so they must be handled with care. The intricate structure of the veins and spines along with the sheer

size of the leaves is thought to be able to support significant weight. In fact, during the 1800s, photographs were taken of small children perched on top of the Giant Water Lily — although word has it that the children actually were supported on platforms.

Personally, I wouldn't want to test the

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strength of the leaves in this manner for fear of doing real damage—but these specimens do give off a definite sense of sturdiness!

WHERE TO GROW THEM

If the climate's right in your area, these are plants that will make major impressions in your ponds. As might be expected, however, that pond must be large to enable the plant to reach its full, mature size.

At a minimum, the pond must be 25 feet across, and the lily must be planted in a six-foot-square container that is 18 inches deep. You *can* plant them in smaller ponds and smaller containers, but they will not reach their fully mature size that way.

Here are some of the other planting requirements:

- ❑ Maintain minimum water temperature of 70 to 75 degrees, which can be accomplished by heating the water if you live in a colder climate

The plant has been known to produce as much as two quarts of seeds from one flower; the seeds are highly nutritious and are considered a delicacy by native populations.

- ❑ Plant in rich, loose, loam soil
- ❑ Plant at 15 to 18 inches below the water's surface
- ❑ Plant in full sun
- ❑ Fertilize every two weeks with one pound of 20:20:20 water-soluble fertilizer per plant.

The sources I consulted also recommend keeping mosquito-eating fish in the water to help cut down on predatory insects and other problems. (I would recommend putting mosquito-eating fish in almost *any* pond environment, but especially in those with water lilies because the water

will be calmer and encourage mosquitoes to breed.)

This definitely is not a plant for the lazy gardener. Unless you live in a tropical environment with minimum temperatures in the 60s, the Giant Water Lily must be grown from seed each year and requires constant repotting as it grows. As many of you know, however, there are some great water-plant propagators and pond services that will be more than happy to keep these specimens going for your clients.

These plants are definitely unusual and not something I'd consider sug-

Continued on page 22

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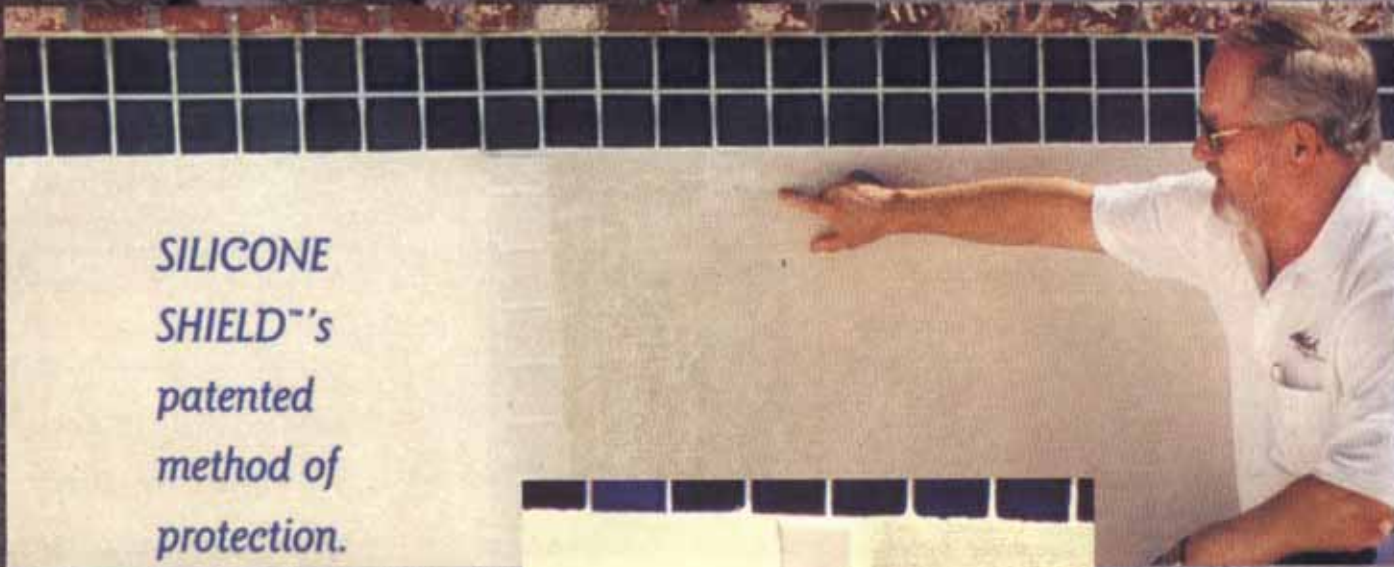
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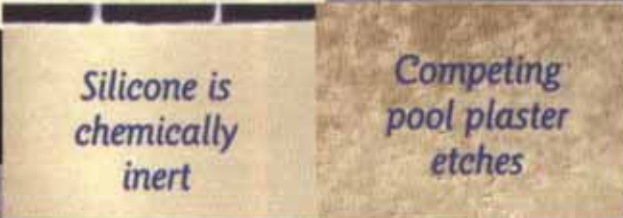
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Continued from page 20

gesting to every client. But there is no doubt that Giant Water Lilies are spectacular and might be just the thing with clients who truly want something different in their ponds.

I can't count the number of conversations I've had with clients who don't want their yard to look like anyone else's – and I'm certain you've had them, too. This is an opportunity to show them something that will make them stand out among their friends and fellow pond owners. If they have room for a large enough pond, if they want something truly unusual, and if they're willing to consider hiring a pond service to keep these unique specimens going, then you've got a live one.

**This definitely is
not a plant for the
lazy gardener.**

Look at it this way: If you build something that sets your client's yard apart from most others, you will become known for your creativity and willingness to take on projects that others won't. In an industry that seems too inclined to crank out similar projects in conventional ways, taking a different tack can only improve and increase your business and make you stand out as well.

Next month: More about water lilies that don't require mammoth-size ponds to grow and that will work well with a lot less care than the Giant Water Lily.

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

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Natural Intuitions

By Jim Lampl

The thing that makes a painting great isn't the pigment mixed on the palette or the brush used to apply it. Those are merely tools, observes landscaper Jim Lampl, who finds art and beauty in the way the strokes are laid on the canvas. The same holds true for watershapes, he says: The art and beauty aren't in the stones or plantings, but in the way all of the components and materials are composed on site.

I believe that what we strive for in our watershapes is evident in the paintings and sculpture of the great masters. The harmony, the beauty, the drama, the excitement of the senses, the total captivation of the viewer create an experience we call great art. The more we can reflect on this work and use it as a lofty benchmark, the more effective our watershapes become.

I've always believed that the best way to work at the highest level is to follow the tenets of classic design, at which point it's all about creating an exciting environment that captures visual and auditory interest and constitutes an "experience" for someone moving through it. And then, of course, there's the water.

To my way of thinking, water is a key ingredient in *any* beautiful landscape, which is why most of



my designs include some form of water—even if it’s just a small stream or a pond. And when that water is something as grand as a swimming pool, it gives me the chance to create truly special environments for my clients.

When you design a swimming pool in the context of the landscape, you have a tremendous opportunity to create a natural environment that is both beautifully detailed and highly interactive. Done well, pools and the spaces around them can become like any great garden area—a place so well defined and so fully realized that it provides recreation layered above a profoundly pleasurable sense of relaxation and escape for those who spend time there.

LEAPS OF FAITH

I tailor my watershape designs to the needs and desires of my clients—a point of departure that has always made for highly individualized results. It makes the work fun for me, but it

also gives me a certain amount of difficulty in describing *exactly* what the outcomes will be once I begin work on any given project.

I rely on photographs of past projects to get the process moving in certain directions and to help my clients visualize. But that’s only part of it: Through the years, I’ve learned to rely as well on past customers and what their referrals can do to help me win the trust and confidence of new clients.

Each of the projects pictured with this story was built for people who wanted something truly artistic and unique for their homes. In each case, they were willing to join me in the process of discovering the potential beauty locked in the raw dimensions of their garden spaces.

That process is largely intuitive. Yes, my background and the work that influences me are both there to guide me (see the sidebar on page 27 for more on these points), but when I’m “in the moment,” working on site, I allow my gut-level re-



sponses to drive the decisions.

It's a personal approach, so much so that linear discussion of what's happening is difficult with clients – and in writing an article such as this one. But as I go, I keep four basic principles in mind that give the process a certain amount of structure as I arrange rocks, plantings and watercourses:

- **Unity.** Each job must have elements that are continuous and tie the whole site together. It may be repetition of flat rocks to create seating areas or pathways or the repetition of certain colors or the repeated use of particular shapes and textures. And it might also mean drawing from the surrounding environment.

This idea comes from Japanese gardening tradition, where scenery borrowed from the surrounding area is incorporated into the work to provide context and a sense of harmony with the greater surroundings. For instance, I'll often tie my work in with views both near and far by framing the vista with plantings.

- **Balance.** This can be a tricky thing to understand and is perhaps the most intuitive component of my designs. In my definition, balance isn't about sym-

metry; in fact, the visual balance I seek is decidedly asymmetrical and is about an overall, compositional balance of the visual weight represented by rocks, plantings, water, open spaces, green spaces and all of the other elements of the design.

At several points while setting rocks or arranging plantings, I'll step back and look at the work as a whole, striving for that balance. Adjustments may be as simple as alternating small stones to provide a visual rhythm or a counterpoint to larger stones. Or it may mean balancing tall plantings with ground cover or providing places in stone structures for soft green plants. This sort of balance is achieved in innumerable ways and is something that must be checked and rechecked as the work moves forward.

- **Variety.** I strive to include a broad range of colors, textures and forms in my work – a variety that sustains visual interest over time. This is another factor I watch for constantly, sizing up the site to see if there are variations in the shapes of rocks, in the sizes of rocks, in their physical orientations – or to see if the plantings provide interest from one area to the next.

I'm fortunate when it comes to plant-

ings because I run a nursery. This lets me think ahead about my plant selections and even do things like prune plants a certain way so I know they'll fit a particular spot. I also have a wider-than-usual range of options from which to choose and spend a great deal of time selecting the variety of plants I'll use and thinking about their relationships to each other and the rockwork and the water.

- **Contrast.** This quality is inseparable from the other design values mentioned here. By juxtaposing differing shapes, colors and textures in plant and rock materials, you add interest – the white bark of a birch tree, for example, and the way it might stand out against a backdrop of evergreens.

These are classic principles of design and apply in almost any field of endeavor, from painting or sculpture to landscape design or architecture or watershape design.

In addition to these principles, I am constantly thinking about things like sequence and the psychology of arrival. *Sequence* is how one moves through the site and what he or she takes in and in what order. The *psychology of arrival* is all about impact. In fact, my overriding

thought throughout the process is how can I create impact with small arrangements of rock and plants; impact in larger garden areas; and impact of the whole.

Ultimately, unity, balance, variety and contrast are my tools for creating an ordered, harmonious landscape that doesn't fall short on impact.

ONE BY ONE

My awareness of the uniqueness of sites and clients has led me to try never to repeat myself from project to project. In fact, if I find myself creating by borrowing from another plan, I back up and begin again. If I don't start over, the work will lose its spontaneity and intuitive feel and will prove far less interesting and exciting for want of that creative spark.

Two projects I've chosen to highlight here, I think, have that spark and embody the four key design principles I've just outlined. (I've also included images from a few other projects and offer captions in those instances that examine points of specific interest.)

The first project (A and B) was started by

The Sum Total

It's fair to say that my work is primarily a product of my own intuitive processes – but it wouldn't be fair to say I work in isolation. In fact, I carry the influences of those whose work I have studied through the years – a broad, deep palette of aesthetic features that fuel my own work in a limitless variety of ways.

My parents, for starters, were both extremely creative people with lifetime interests in the fine arts. On my own, I spent lots of time in the woods of the northeast and the great cities of Europe and also traveled over West Africa in my time with the Peace Corps. I've been influenced by the modern as well, reveling in places such as Disneyworld in Florida and (now defunct) Busch Gardens in Los Angeles as well as countless parks, public gardens and resorts around the world.

For all of those experiences, I am perhaps most profoundly influenced by what I view as the highest expression of man-made exterior environments: Japanese gardens.

I believe without hesitation that the great Japanese gardeners are masters equal on the scale with Michelangelo and Van Gogh. One outstanding garden-maker in particular, Hoichi Kurisu, is a key influence for me. The level of detail in his work and the way he explores relationships between elements of his spaces is absolutely breathtaking, truly transforming.

I'm also the product of my education as a landscape architect and the training I received at Penn State. I lament the fact that the curriculum introduced me neither to the principles of Japanese garden design nor to anything having to do with watershaping – but those are gaps I have happily been filling in the more than 20 years since I graduated.

– J.L.

B





a pool contractor, but the process wasn't meeting the clients' expectations and I was brought in to complete the work. The clients—the wife a painter and the husband a graphic artist—had strong ideas about what they wanted aesthetically.

This starting point was less than ideal for me: The shell had already been shot by the time I arrived, so I was basically stuck with its contours and elevations. Fortunately, however, the ground was bare, so I could start from scratch in that respect.

It was a small space, and they were interested in creating an area that felt separate from an adjacent carriage house and created a sense of solitude. This meant that I would be using a combination of tall, medium and low plantings in fairly narrow strips of ground. They also wanted to see a rugged-looking waterfall on one side of the pool, balanced by a patio and seating area on the opposite side.

I began by placing the stones for the waterfall based on a rough sketch the wife had done of a rugged arrangement of boulders. This gave me a point of departure—and the liberty to make real progress. I set up two source points for the water, which cascades down a narrow path between large, rugged boulders and then joins as a single flow that spills over two large, flat stones just above the water's surface. A crown of rocks extends around the perimeter of the pool, providing a variety of irregular shapes.

I used a broad palette of plantings on this job including rhododendron, four varieties of Japanese maple, sweet bay magnolias, narrow pines, hollies, service berries, azaleas and a whole slew of herbaceous plants, including ferns, hostas and tree peony.

The photographs show the interrelatedness of the various shapes, textures and colors of plant



When you design a swimming pool in the context of the landscape, you have a tremendous opportunity to create a natural environment that is both beautifully detailed and highly interactive.

and rock materials. The density of the plantings and the arrangement of rocks provide the desired sense of shelter and privacy, while the smooth trunks of the maples and birch trees contrast with the almost fleshy foliage of the herbaceous groundcovers. The flat rocks just above and below the surface provide places to lounge.

The interior of the pool is shotcrete painted with a black swimming pool paint to deepen the visual surface of the water as it reflects the soothing, deep greens all around it.

NATURAL PROGRESSION

The second set of images (C through E) comes from a project that grew out of the first through a referral: The new clients were friends of the people who commissioned the first project.

Their home had recently been remodeled to include a breakfast nook that provided prominent views of the backyard; they were looking to add value to that in-

Select Stones

I like to use natural rock on my jobs and am among those who believe it's just too difficult to replicate the work of nature using artificial rock methods. That's not to say that many artificial rock structures don't look great, because many do. But in the area in which I'm fortunate enough to work, there is no shortage of natural rock sources that enable me to get the job done.

I stick with surface stone because the side that has been exposed to the air develops a very interesting patina along with interesting patterns of moss and lichen. And I go to great pains in selecting stones, looking for a variety of shapes and sizes and always trying to find character. In particular, I keep my eyes peeled for good flat pieces that can be used as weirs or seating areas or in pathways. I also want large dramatic boulders that can be contrasted by smaller pieces.

It's time well spent.

—J.L.

vestment by beautifying the surrounding exterior space. They also wanted to transform the view (which was of their garage across the backyard) and create pathways and destinations within the yard.

I say the project "grew" because of the process we went through to land on a design that included a pool.

They had started out by asking me to replicate the look and feel of their friend's backyard, but with a very small waterfeature. As the plan developed, the small waterfeature became more of a pond – at which point I suggested that if they were going to put in that much water, it might be nice to hop in and enjoy it.



That led to a design that included a natural-looking spa and waterfall, but as discussions continued, I stirred the pot again by observing that since we were already going to the effort of building a body of water to sit in, why not expand the vessel a bit so that you could push off into the water?

By the time the design was finalized, the pool ended up taking about half the space in the backyard – but in such a way that it added a sense of spaciousness. This effect was achieved by using the pool to create several points of interaction with the environment and by setting up a variety of distinct spaces with differing views.

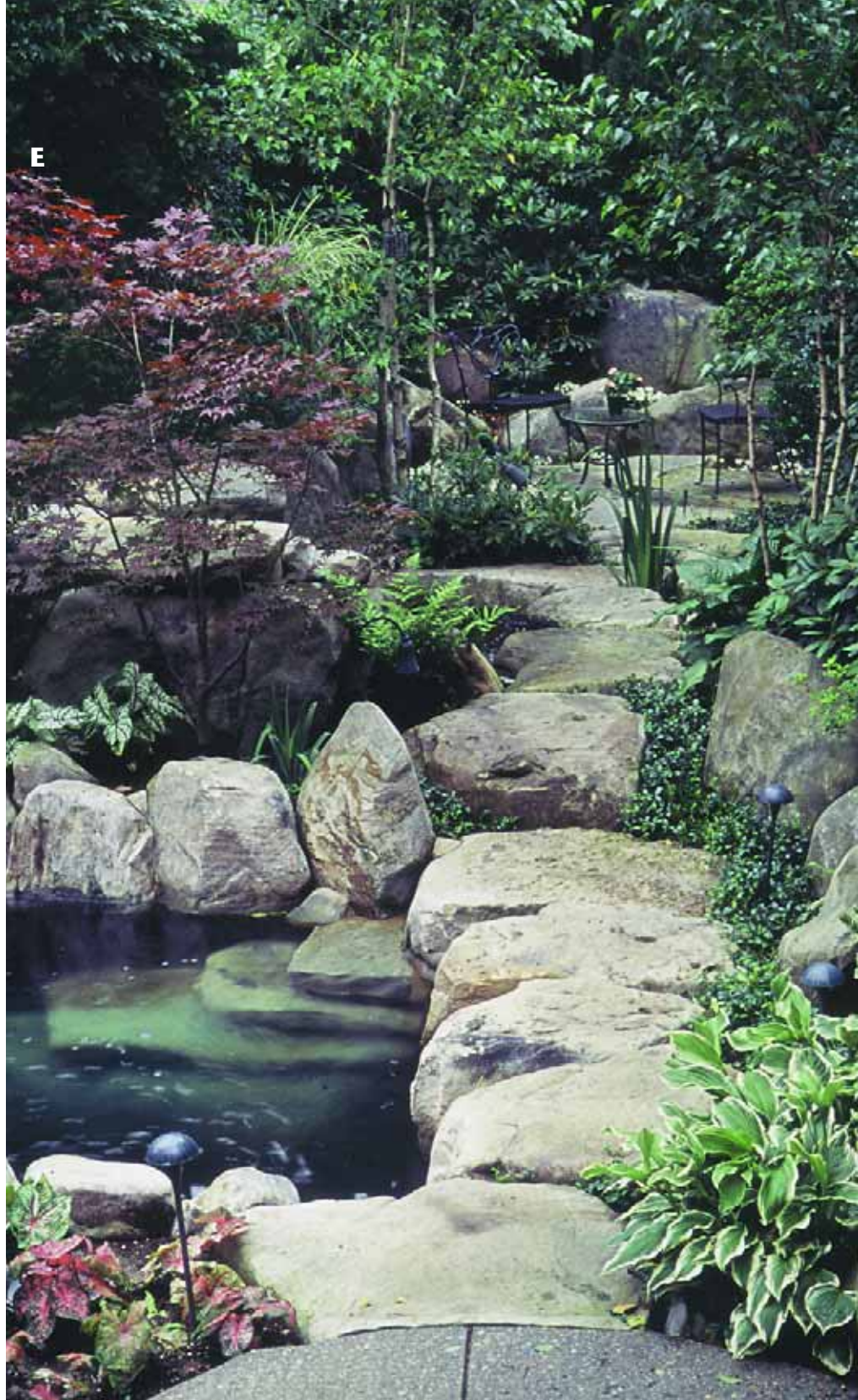
This concept of creating an illusion of space is always at the back of my mind. I came to understand it when I visited the spectacular Jardin Exotic just outside Rabat, the capital of Morocco. It's a lush garden that provides a variety of footpaths in and around a pond, each leading to a different location and providing a variety of views – so many that you'd swear there were several ponds and not just one. In this case, I used the same control of approaches and lines of sight to increase the sense of space around this pool.

The key here was the use of flat rocks around much of the pool's perimeter to provide a variety of viewpoints, seating areas and points of access to the water and the foliage. The rock path leads to a small alcove nestled among tall plants in which a small fishpond is fed by a small rock waterfall. I also placed a bench under the waterfall in the swimming pool – a common detail, but one I had never done before – and installed a flat hydrotherapy seat with a couple of return jets. Below the waterline at several points and depths are rocks intended for seating.

PRACTICALITIES

As with many shells that are designed to support rockwork, I used an expanded bond beam here to provide support and an adequate mounting surface. I also set up shelves inside the pool (and below the waterline) to enable me to submerge large rocks and communicate a greater sense of unity between rockwork above and below the water's surface. These shelves are set anywhere from 4 to 12 inches below the waterline and are 8 to 30 inches wide.

Selecting the boulders was particular-



ly critical on this job because of the pathway detail. I had to find rocks with good patina that were flat on one side and had no slopes, irregularities or bumps that would constitute a hazard. Sometimes that meant mounting the various boulders at different depths so the upper surfaces came up level. To contrast the flat

rock, I chose several distinctly vertical pieces to spread throughout.

The planting scheme for this project was very similar to the variety of plants I used in the first project: Tall maples, birch, dogwood and rhododendron provide cover for the garage and a sense of shelter, while shrubs and groundcovers pro-

Continued on page 33

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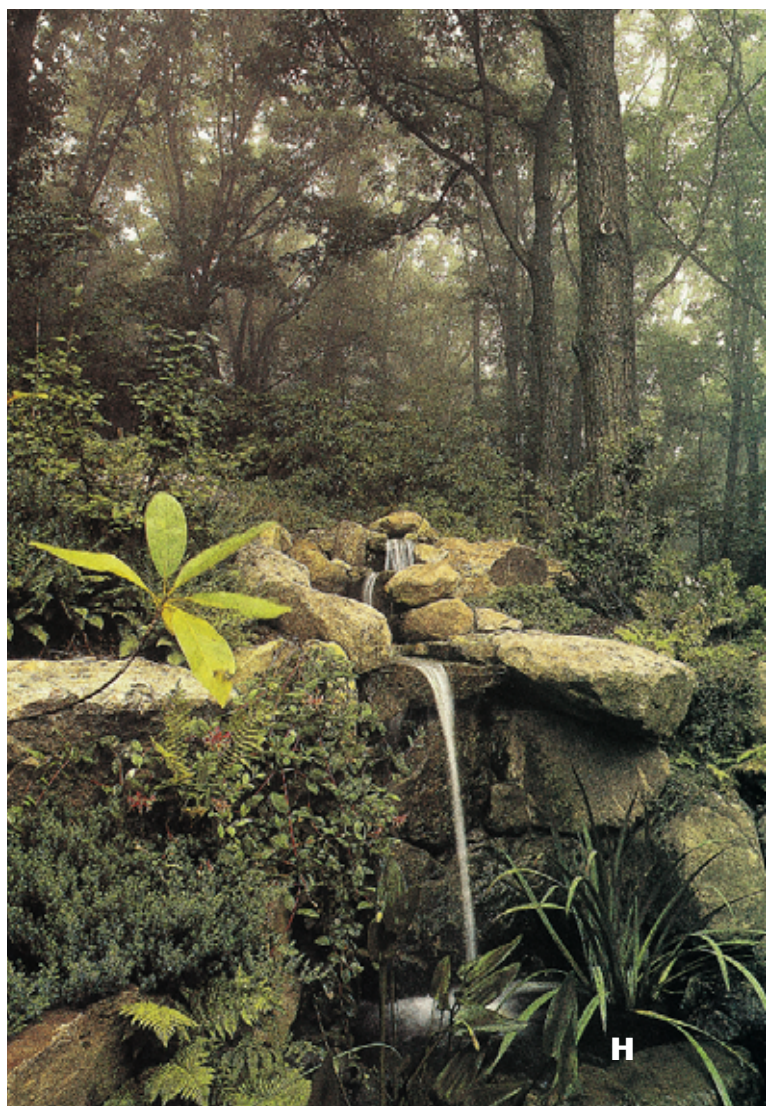


G

The approach I use to watershaping can be said to borrow liberally from principles of Japanese garden design. I find particular appeal in the sense of harmony and balance that can be achieved with extremely simple forms when they are arranged and organized with care (G).

While I never stray far from those ideals, I also find inspiration in the forests of Pennsylvania and have striven to capture the experience in several projects through the years (including those seen in H and I). For starters, the natural source material is drop-dead beautiful. Also – and just as important – I like the thought of my work helping observers recall an experience they might have had, a vista they might have seen in tromping through the local woods.

In that sensory context, even a ribbon of water falling into a pool can be powerfully evocative.



H



I

vide a lush base plane of greenery.

I'll confess that what I'm after in all of this is a highly artistic form of expression. I see myself as a provider of sublime pleasures and surprises that defy precise description in unique settings that have a feeling and ambiance all their own.

Of course, as we seek to mimic nature, we invariably fall short of the mark. The key to coming anywhere close, I think, is by taking time in the design and construction processes to let the composition *unfold*. Just as the pools I build can't be cranked out or mass-produced, they defy any attempt I might make to draw them accurately in advance.

For me, the real blueprints for my work are found in the great gardens and exterior spaces I've seen around the world. They give me the inspiration I need, time after time, to fulfill the desires of clients who seek spaces of great and enduring beauty.



Light on White

In the project seen here, my clients wanted a white interior surface rather than a dark color that would have blended more smoothly with the surrounding stones and plants. Their reasoning was that the white surface would create a fresher, more inviting look for the water itself, which it does.

In fact, when the sun shines on this pool on a warm day, the water brilliantly reflects the sky and the surrounding rock and greenery. But the contrast between the stone and the white painted surface creates a distinct borderline between the rockwork on the pool's perimeter and the interior surface.

In the future, whenever I work on this sort of natural-look pool and am asked to finish its interior in white, I most likely will go to greater lengths to vary the depth of the rocks and obscure this straight, visual boundary by building interior ledges at a variety of depths to support them.

—J.L.

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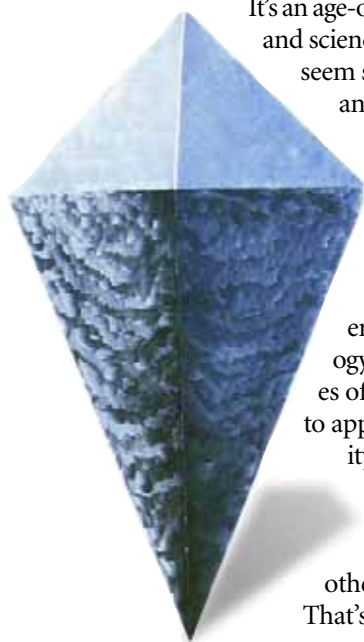
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As watershaping moves toward new creative frontiers, the trade is approaching a point where it's tough to set a boundary between craft and art. One who clearly has crossed the line into fine art is modernist sculptor Barton Rubenstein, who uses water to create a range of intriguing aesthetic experiences. They might not look like other watershapes, but he insists that the physical and aesthetic principles he applies are all quite familiar.

Fluid

Expressions

By Barton Rubenstein



It's an age-old paradox, this relationship between art and science. On the face of it, things artistic may seem solely the realm of high-flying thinkers and philosophers who spend their days at the far reaches of interpretation and meaning. By contrast, engineers and scientists would seem to be dealing purely in the certainties of what is quantifiable and real.

The truth is, I don't know of a modern art form that doesn't involve technology of some kind. Conversely, most branches of modern science call upon researchers to apply a great deal of intuition and creativity to the processes of exploration and discovery. In other words, neither the arts nor the sciences could exist without ideas and disciplines derived from the other.

That's especially true when it comes to water

systems. Whether created for aesthetic or recreational purposes, art and science can come together here in a particularly compelling and interesting way. By combining technical disciplines with aesthetic sensibilities, I believe that watershapers of all sorts can create works of tremendous emotional impact and enduring beauty.

One of the keys to success is developing an understanding of how what we *know* can be used to influence the way we *feel*.

INTO THE MYSTIC

In my own work, I strive to blend the technical disciplines of hydraulics, visual science and materials science with the almost mystical powers found in the sights and sounds of running water. In



so doing, I create what I call “water and kinetic sculpture.”

And while my own particular form of watershaping may at a glance seem a far cry from building swimming pools or fountains, I’m convinced that the technical and aesthetic principles at play apply across the spectrum.

Before I turned to sculpture, I was a scientist and mathematician. For years, I studied a branch of mathematics and neuroscience known as “visual psychophysics,” and much of my research focused on how the human mind receives visual information – and how, as a result, we perceive patterns, motion and depth. Basically, I was using mathematics to measure and understand how it is we actually see things.

One of the most compelling things I learned is that somewhere around 40% of the human brain is dedicated to the visual system. On the most basic level, this means that the quickest way to reach someone’s brain is through the eyes. This is *very* good

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Legs

In designing my pieces to create a sense of curiosity and surprise, I put a tremendous amount of time, energy and experimentation into manipulating the ways in which water moves, divides, conjoins, falls and sheets around, over and within the solid components of a sculpture.

Here, water glides down two trapezoidal and cantilevered faces – and the flow tapers because of the relationship between the metal surface and the surface tension of the water. This has the effect of making the surfaces of the legs, which appear so sturdy and fixed in place, constantly shimmer beneath the steady flow of water.

My fascination with water isn’t rooted entirely in theoretical terrain. In fact, I spend a lot of my free time canoeing through wilderness lakes and rivers of Florida, Maine and Canada. As if some mysterious primordial force is at work, the sight and sound of water as it flows penetrates and mesmerizes me like nothing else.

That experience of nature – the beauty of waterfalls cascading into a raging river – is what inspires this bronze sculpture, which demonstrates how the delicate flow of numerous water sources can quickly become a formidable and unified force.

River Twist



The beauty of using water as a sculptural element is that it immediately penetrates the consciousness in a way that other materials do not. It is immediately experienced on an intuitive and emotional level in a brief span of time, especially when it reflects other organic forms with which we all are familiar on one level or another.

In this piece, essential biology is suggested as water drops out of two chutes, down through small gullies, into an elliptical pond and, finally, over the edge into a catch basin. Enhancing the effects of the water in motion, I used a special mica-embedded dust on the blue/green patina to create a shimmering effect.



Fallopia



Diamond Dance

As a designer, I typically choose a particular water pattern, such as a sheet or a misty rain shower, and then build the more physical sculpture around it. As is true of all watershaping, this calls for knowledge of several disciplines, from plumbing and electrical systems to engineering and hydrodynamics.

In this in-door sculpture, I called on every one of those disciplines as water streams down the face of the large central diamond, temporarily coming to rest on a series of water tables. Wave patterns created by the carefully controlled flow of water across these tables reflect upward, causing the entire piece to undulate and "dance."

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news for those of us who create things that are meant to be seen.

In addition to being seen, I want my sculptures to be *experienced*. I seek to create layers of perception and understanding in different people at different times. I want people who view my sculptures to conjure thoughts and feelings as a result of what they see – and hear. Of course, these impressions can be evoked in many different ways; in my case, I've chosen to put the central focus on *water*.

The actual structures are made of metal, stone and glass and tend toward geometric forms that the experts classify as “modernist.” As you'll see in the photographs that accompany this article, some pieces are based on a distinct theme or idea, while others are more abstract. Many of my pieces have moving parts that interact with water or wind; in others cases, however, the only thing that moves is the water.

When you break it down into specific behaviors and patterns that science can quantify, you see that water behaves in certain ways when placed in specific physical conditions. Using an understanding of surface tension, basic hydraulics, sound and visual phenomena, we can manipulate these characteristics in different ways through design and use of technology. In other words, the behavior of water in a controlled system is something we can *design*, *measure* and (if only to a point) *predict*.

ORDER AND CHAOS

To me, this is where the use of water becomes most fascinating. In fact, there's a long-standing debate in the scientific community about the nature of patterns and chaos, and water provides a perfect example of how nature can give

Continued on page 40

In my work, I often use simple shapes, basically because I enjoy simplicity in artistic expression and because these simple shapes provide an uncluttered space in which water shows itself off to best effect.

The Hebrew phrase *L'Dor V'Dor* means “from generation to generation,” and the piece symbolizes the life source (water) for each generation (as represented by the star shapes) and how this energy is passed down through the generations. Building the effect, the flow of water causes the shapes to rotate slowly as the generational energy gradually passes from level to level.



Crossroads

Iften, the impressions made by a modernist work of art don't take a lot of intellectualizing: All you have to do is stand there and look at it to enjoy the experience on some level. In other words, understanding isn't necessary to enjoying the experience itself.

That's the case here in a sculpture in which water emerges from the tops of these stainless steel shapes and gently flows down the sides, distorting and enlivening the reflections of the surrounding area. You could make a case that the subtle modern design of the piece contrasts with and lends dignity to the classic architecture of the nearby buildings, but I wonder: If the experience is pleasurable on its own, is making the historical connection necessary?

The potential contrast of situating a modern sculpture next to a classical building was an important consideration. The building is located in a National Historic District, and after reviewing various designs, the committee overseeing the project and I decided that placing a sculpture of this genre could actually *connect* the older building to the modern life now thriving in the area.



Dash & Refusal

By using moving water, I believe I'm able to draw attention to both the motion and the sense of time that results – and, by way of contrast, also emphasize the fixed elements within the work.

Here, mounted on limestone, are seven bronze components complemented by water streaming down the plain stone face. The bronze framing is equipped with lower main basins and pumps that push the water to the top basins from which it overflows. This all looks like a simple abstraction – until you notice that the negative space between the components offers profiles of human figures, one on the run and one standing in repose.

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us both simultaneously.

While anyone can predict certain outcomes with water – it will flow down a trough, for example, or it will fall as a sheet for a certain distance – as a fluid medium, water overwhelms these predictable outcomes very quickly. A laminar effect with water, for instance, can only be predicted accurately and measured for a very few seconds over very short distances before the coherent flow breaks down and the water dissociates into a chaotic spray.

So I know going in that, in works such as mine (or other designs that seek to contain water for a specific aesthetic effect), the outcome is really only *partially* predictable.

This variability and tendency toward chaos influences every-

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Because so much goes on subconsciously when viewing water, I think that making the outward appearance of a sculpture simple helps to bring the experience provided by the water closer to the person viewing it.

Here, simple sheets of rain fall between tall, stainless steel columns. It couldn't be much simpler, but set among trees, it becomes a portal that literally tempts the observer to step up to (and through?) the gentle cascade.



Screen

The Blairs Gateway Sign



To my mind, the juxtaposition of water (ever-moving and ever-changing) with materials that appear permanently fixed in place is extremely compelling.

Sometimes that juxtaposition can be startling, as with this large outdoor sculpture, which stands alongside the main sign of a large apartment complex. This piece incorporates numerous rectangular shapes of varying lengths, positioned on three levels. Ragged sheets of water pass between the levels, obscuring the view of the support struts – thereby creating the vague sense that the shapes are floating.

Behind every good water effect, it seems, is a properly engineered catch basin and an accurately sized and powered circulating system to drive the effects to perfection.

That was definitely the case here, where a water curtain drops from a top armature equipped with an internal baffling system to ensure smooth, curtain-like flow over a graceful, high-tech assemblage of shapes. Adding to the effect, the falling water makes the different geometric shapes rotate at varying rates.



Stealth Wing



TOWER

The classic fountains that contain sculpture (such as the Trevi Fountain in Rome, depicted on the cover of the June/July 2000 issue of this magazine) are so compelling to the observer because we see the moving water elements as they exist in each passing moment as well as figures that endure motionless for centuries.

This was among the inspirations for this tall structure, in which water rains down through hundreds of holes inside and outside a series of triangular belts – a neoclassical restatement of the relationship between fixed shapes and a changing environment.

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thing I do, and the process is further complicated by the fact that the work is usually placed outdoors, where wind, temperature, humidity, the time of year and even the time of day has an effect on the way water looks and acts in my “controlled” systems. These random influences mean that water, when used as a sculptural material, provides both predictable patterns and random textures.

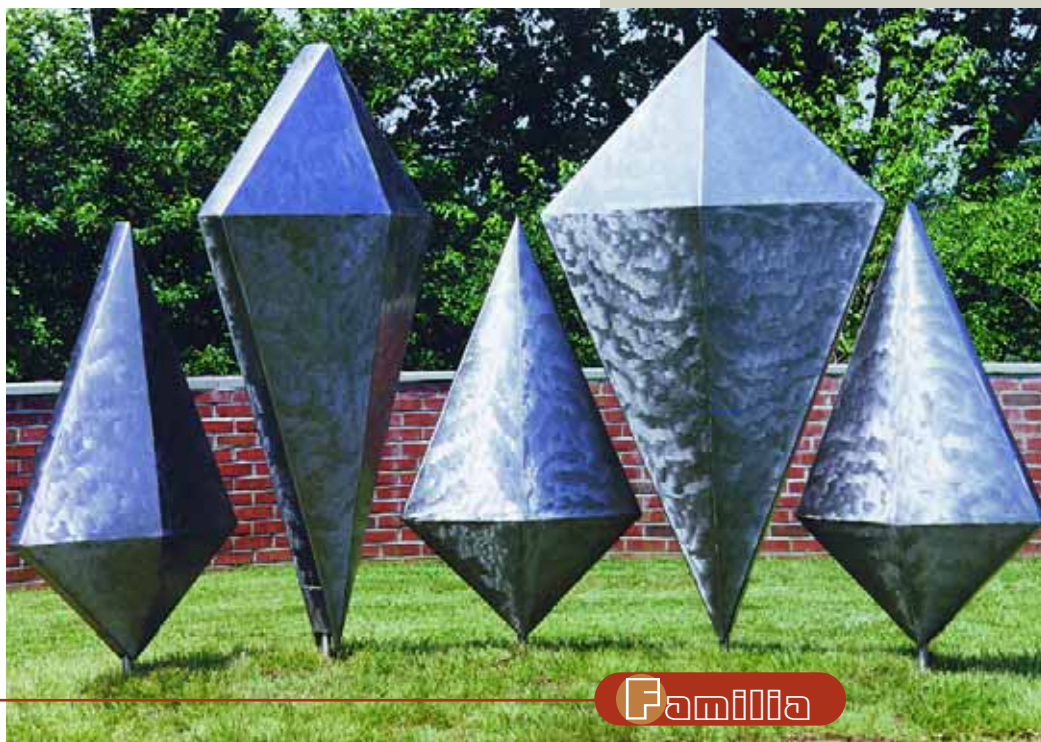
In that sense, water gives us the best of both sides of the order/chaos paradox.

All of these generalizations about art, science, chaos, order, simplicity and technology don’t mean much until you actually get inside the experience of a waterfall, a rushing river, a graceful fountain or a watershaping sculpture – which is why I’m going to let the photographs and captions on these pages tell the rest of the story.

Clearly, there’s a shortcoming in the fact that these are still photos rather than videos (which are available upon request by e-mail – bartsher@aol.com – or at my web site, www.rubensteinstudios.com), but I think they’ll give you a good idea of what I mean when I discuss the raw power of water in motion. It can be a true art form – and one not beyond the reach of talented watershapers.

The thing I enjoy most about being an artist and watershaper is the fact that I get to create experiences for other people to enjoy.

I’ve added this image to the article simply because I think you’ll enjoy it – even though it doesn’t involve a drop of water. Instead, it relies on the wind to turn these five diamond-shaped objects on their spindly vertical axes. They nearly touch as they float and rotate – but not quite.



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A photograph of a stream with large rocks and a small bridge in the background. The stream is filled with water, and the rocks are scattered throughout. The background shows a bridge and some vegetation.

A Stream Comes to Life

By Rick Anderson

The true artistry of stream building is found in the closing phase of construction, says landscape designer Rick Anderson. Here, in the final installment of his series on stream-crafting, he walks us through the concluding steps he takes to transform a raw installation into a finished watershape that dazzles the eye with its natural look and delights the ear with its gentle sound.



Now comes the fun part.

The final stage of building a stream is where all of the planning and close attention to the stream's earthen substructure, transitions in elevation, liner alignment and hydraulics come into play as you move to build in details that effectively mimic nature.

In the first two installments of this series (see the April/May 2000 issue, page 34, and the June/July issue, page 54), I discussed in detail how you excavate and grade the site, place the major transition stones, lay in the liner and install the pond skimmer and headwater system. I've talked about the importance of checking and rechecking the work from key focal points as you go. Most important, I've stressed the fact that many of the biggest design decisions can only be made on site, as the job proceeds.

Now it's time to step back once again and take a long look before the final phase begins and we start working with focal stones, river rock, pea gravel and aquatic plants and get down to details, from adjusting the contours of the edges to blending those all-important edges with their surroundings.

FOCAL STONES

Let's reset the scene: We're covering the installation of a 90-foot stream that terminates into a 30-by-25-foot pond. Most of the elevation change – a scant four-and-a-half feet – occurs with three main waterfall areas, leaving only slight inclines in the meandering stretches of the streambed.

At this point, the transition stones that form the waterfalls are already in place. The liner has been pulled into position and secured by the placement of these critical stone structures. The edges have not yet been trimmed. The pond skimmer with the system's pump is installed at the base of the watershed and is plumbed to the headwaters/bio-filter unit at the top of the stream.

The final phase begins with the addition of what I call the "focal stones." These are pieces that I've set aside because I think they'll look great – an opinion I usually form by wetting all of the rocks I have at hand to determine what they'll look like in the streambed. Stones with interesting quartzite or feldspar patterns are given the highest priority.

The stones I most often choose to work with are metamorphic rocks that show clear signs of having been weathered by the action of thousands of years of water. They have *character* along with swirls, striations and interesting colors and textures. On the project pictured here, for example, I've brought in lots of gneiss, a stone native to North Carolina. This gneiss has

large amounts of quartz and feldspar and is particularly eye-catching when wet.

Now I place these stones where I'm sure they *will* get wet and be shown to best advantage. This usually means placing them right in the streambed, either adjacent to the transitions at the waterfalls, in the middle of the stream or at a junction where they'll catch a lot of splash. All of these stones are placed inside the liner, further helping to secure (and hide) it. Just as the rocks would be found in a natural stream, I'll scatter them somewhat randomly, but with greater concentrations in and adjacent to the waterfall transitions.

(Note: In the photos seen here, I didn't wet the stones outside of the watercourse so you can see the transitions between wet and dry areas – and how I've placed several of my focal stones so they're wet and really stand out against the dry rocks.)

Up to this point, the work has proceeded only in the anticipation of the water's flow. When I give the system a test run later on, I'll make more adjustments to the placement of the focal stones to maximize their beauty – and control the flow of the water for both appearance and sound.

Once the focal stones are in place, I turn my attention to the edges by placing what are typically smaller, more ordinary-looking stones at the liner's edge, further securing the liner and beginning the process of blending the liner's edge with the surrounding ground. Working deliberately to form a random edge line with the stones, I try to set up areas that look as though rock outcroppings are reaching into the stream as well as areas where it looks as though the stones have migrated or tumbled into position.

A NOBLE CHANNEL

As I place these edge-securing stones, I simultaneously work with the contours of the channel or trough of the stream. This is perhaps the most critical part of the entire job with respect to functionality. It's also where many watershapers really miss the mark aesthetically.

I spend a great deal of time here, lifting up a few inches of liner's edge at a time and tucking soil underneath it to create subtle mounding along the stream's banks. Having excess liner is crucial for this process, which is why I always observe



I took the first of this pair of photos of the stream's headwaters right after completion of the project (A). The key for me here was making certain the vertical elements at the falls and in the background framed this cascade in the way I wanted. I also sought to make certain the bio-filter box was completely hidden. By the time a second photo was taken eight months later (B), the plantings had begun to take hold and complete the picture. Note how the foreground stones anchor the view and guide your eye to the falls.



my job-site motto: "Cut no liner before its time."

Inch by inch, I contour the edges to blend with and embrace the edge stones and any focal stones I've placed near the edge. In short, I do everything I possibly can to avoid having edges that look like curbing.

The project depicted here is an example of a babbling-brook approach, as opposed to a crashing river or whitewater effect. This design choice has a strong influence on the way I worked the 180 feet

of edge in this particular watershape: The stream meanders along in a channel from three to six feet wide at an average depth between one and two inches – a very slow stream. This allowed me to create an extremely soft and shallow edge.

The edge creates the channel containing this flow of water, so it is obviously and absolutely critical that the edges be above the waterline to keep the water from leaking away. But we're talking *subtle* elevations: Because I want to have only a little

bit of liner to hide, I'll be working only an inch and a half to two inches above the waterline in shaping the edges.

The soil I use for backfill is always compacted with a tamper. This is extremely important: In most cases, you will see some settlement after any stream has been in operation for a while. Compacting the soil at the edges prevents *severe* settlement that could, in a worst-case scenario, allow the stream to drain into the surrounding yard or even into the home itself. (I get into this issue a bit more in the sidebar on page 50.)

Bottom line: In my work, I push the envelope by creating tight, low-profile edges. I do this for purely aesthetic reasons, even though it means I have to work the edge literally inch by inch, lifting the liner, adding soil, tamping it in place, positioning and repositioning stones and always stepping back to reevaluate the look. The added time I spend here allows for seamless transition into the landscape.

There's a tendency in building streams to take the easy way out by building streambeds that look more like troughs with steep sides that may rise eight inches to a foot or more. Yes, it's easier to contain the water that way, but I believe this leaves the work with an extreme visual deficit and what I call a "drainage-ditch/rip-rap effect." In other words, a deep trough with rocks piled up the side will make the work look artificial, as though the rocks have been dumped in place to stop erosion.

It may be tougher to do it my way and shape imperceptible rises along the edges, but in my book it's the only way to maintain the illusion of a real stream.

SIZE DISTRIBUTION

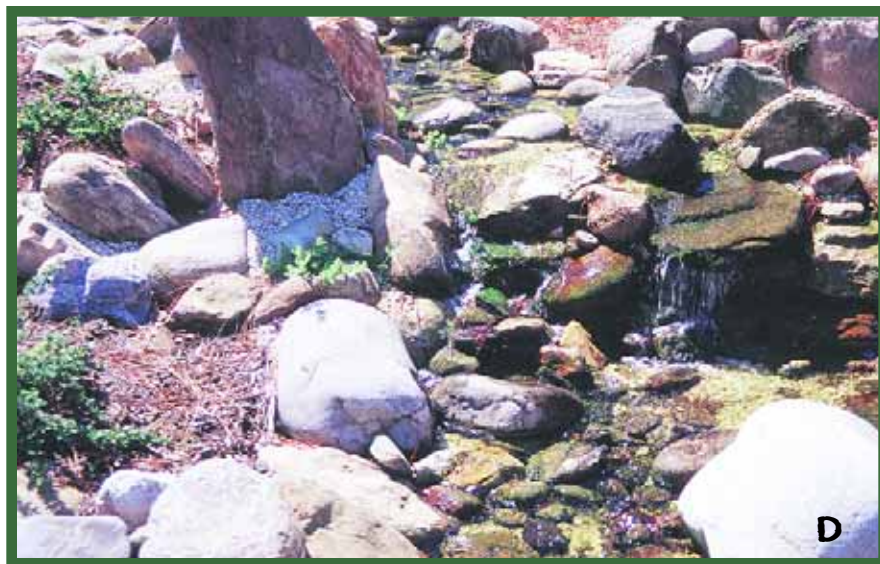
Once I'm satisfied with edges (or *close* to satisfied, anyway), it's time to add pea gravel and river rock to the remaining exposed portions of the liner in both the stream and the pond.

On this job, I used about seven cubic yards of small river rock – smooth, water-worn stones ranging in size from one to three inches in diameter. I also used six yards of pea gravel, which consists of very small particulate stones of less than 3/8-inch diameter.

I usually sling the pea gravel and river



In another pair of photos taken upon completion (C) and then eight months later (D), you can see the jumble of stones I've amassed to create a variety of interesting water flows and sounds. I worked very hard here to make the edges blend seamlessly into the surrounding terrain. I also avoided using too much stone along the upper embankment to avoid cluttering the area where water pools behind the weir stones.



rock for a totally random look. This mixture of varying sizes helps with the natural *feel* of the system. I'll then go back through and hide any liner left showing.

(I'm among those, by the way, who believe that lining the bottom of the stream and the pond with a bed of small rock material is critical to the appearance as well as the function of the overall system. For starters, there's no more effective way to hide the liner; it also looks very natur-

al, works as a filtration system and houses beneficial bacteria.)

When you get out and study waterways in nature, one of the things you notice is the wide range of rock sizes you'll see in streams and rivers. By using large stones as well as smaller river rock and pea gravel, you give the work variety and contrast in size and texture. This adds interest and looks great.

The gravel-and-rock bed also provides

a very healthy environment for plants and fish. And contrary to what some water-shapers believe, the presence of the small rock materials keeps the overall system much cleaner than is the case with systems that lack a rock bed. I'm sure there are builders of closed systems, especially those that house koi, who totally disagree with me – especially when it comes to pond bottoms.

With the rock in place, I step back again and look at the whole stream, top to bottom. If I've done my job, it already looks decent as a dry streambed.

At this stage, I may make a few more adjustments in stone placement and may spot some places where I need to adjust the size distribution of my rocks. Now it's time to put some water in and see what happens.

TESTING THE SYSTEM

For this trial run, I fill up the pond to a point about midway up the skimmer mouth and turn the system on. As the system lurches into action, I hose down the stones upstream to flush the system and be sure that everything is as clean as possible.

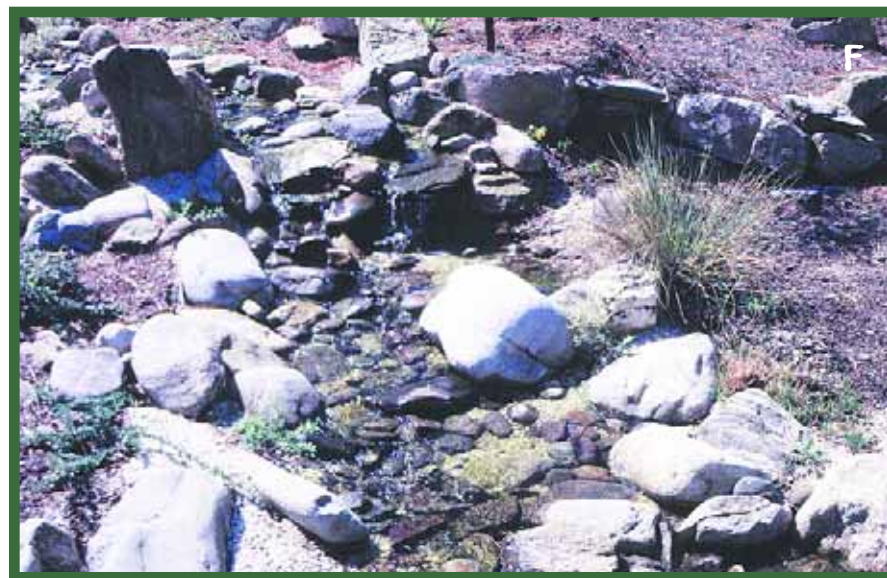
Once the water begins to flow, I'm almost certain to find places where the water may be slipping over the edge or flowing over a stone in a way I didn't anticipate. This brings up a major point about water: For all of its wonderful spiritual and aesthetic qualities, it is also very opportunistic. Beautiful but insidious, water will always find the path of least resistance – a path often not anticipated. Particularly in a large stream like this, in fact, the water is almost *certain* to do some things that were not planned.

As a result, I use this first run for an initial round of troubleshooting and adjustment. I may reposition some stones so that they become wet or slow down the flow here or there. I'll also make sure the pea gravel and river rock are staying in place – and I may add a few more stones for purely aesthetic reasons.

Once I'm satisfied that the system is working smoothly, I'll shut it down and pump out the water using a sump pump set in the deepest part of the pond. Even though I've done my best to make sure that all excess dirt is off the stones that are



These photos also show the stream's development in the eight months after completion. The earlier view (E) shows how I worked to blur the edge between the streambed and its surroundings. I think I did a good job, but the plantings truly obliterate any sense of a border between the aquatic environment and the adjacent terrain (F).



inside the liner, this first filling will be pretty dirty, so it's best to change out this dirty water.

(Always concerned with water conservation, I do not route the water to a storm drain or the street. Instead, I use the water on the customer's grass, trees and other plantings. If I have to, I'll even water the *neighbors'* lawns to avoid wasting water.)

With the stream and pond empty once again, I start adding aquatic plants. In the shallow portions of the

stream or pond (what I call the "marginal" areas), I use grasses, water celery, mints and horsetail – all of which are happy in about two to three inches of water. As I place these plantings, I'm always thinking about using marginals to help create seamless edges while establishing them in natural, non-linear patterns.

Down in the deeper areas of the pond, I prefer water lilies. I take them out of their containers and wash away



When you work with stones of great character, the possibilities for making unique edges multiply. Here, you can see how I've used native Carolina gneiss in and up out of the water (G) and used aquatic and terrain plants to meld the edge and make it all flow together (H, taken eight months later). Burying the stones in this way not only improves their long-term stability both physically *and* visually. It also increases the sense that the stones are natural and have been there for ages.

80% of their soil before planting them directly into the bed of pea gravel and river rock.

THE SECOND FILL

At this point, almost all of the stones and plants are in place and the stream is almost finished. Now I refill the system using a couple of hoses, making sure not to dislodge plants or rocks with the water flow into the pond.

If I need to add fish to the system right away, I'll use a de-chlorinator. If the fish can wait, I'll let the system run for three to seven days before adding them. (In the depicted project, my clients waited about a month before adding goldfish.)

Again, I fill the water up to the mid-point on the skimmer face and boot up the pump. In a job like this one, with 90 feet of two-inch plumbing running upslope, it takes several minutes for the water to begin flowing from the headwater system. Once the flow begins, I keep filling until I'm satisfied that the water level has equalized between the pond and skimmer.

Now it's time to make the final adjustments. This is my favorite part of any project.

At this point, the whole stream looks pretty good (I hope) and all the major elements are in place. Now I go through the whole system step by step, reevaluating the placement of plants and stones and making a variety of adjustments. A lot of what I do here involves tiny adjustments of flow and speed, but much is also tinkering of the purely aesthetic kind.

I usually hold a few really nice focal stones back and place them in spots throughout the system. I may use one, for example, to create an eddy where the water will slow down and become a small pool. (These small, slow pools of water are very attractive to birds.) I'll also adjust stones around the transitions to manipulate sound. And I'll continue to work the placement of stones around the edges, always being conscious of places where the water may want to escape.

This is where the time I've spent studying nature really comes into play. I constantly ask myself, "Does this part look natural?" "Does it look right from the primary focal points?" "Does it sound right?" "Does it give me a feeling of tranquility and a sense of natural beauty?" Here, the work I'm doing goes well beyond tweaking: For me, it's the artistic phase of the process, and I'll spend as much time as it takes to get things right.

Now, with everything in place and running, I can finally get a true sense of the way all the key elements work *together*. I may add a few more grasses, or maybe some mint or horsetail. I'll examine every inch of the edge, looking for signs of the water wicking over the edge. Once I'm done, I can trim away any excess liner.





A long view upstream shows the melding of aquatic and terrain plants I'm after at the water's edge. This part of the stream is very lazy and shallow, which makes the edges easier to work with because less stone is needed to stabilize and hide the liner. This all works because of decisions made in the design stage and in the initial grading that keep the project from looking anything like a drainage ditch.

SNIPS IN TIME

I wait to cut off the edges of the liner for a very simple reason: It often comes up in this last tinkering phase that I'll need to increase the height of the mounding along the edges in a few spots. Leaving the liner intact is a precautionary measure, an insurance policy – and it's something that has enabled me to fortify many a stream very late in the process.

There does, however, come a moment when you must feel you've got it right and the liner can be cut. I use a razor knife, moving carefully along the outer edge of the rockwork that borders the stream, leaving a half-inch or so of liner and then rolling it under and burying it beneath the soil. Then I blur the edge even more by scattering some pea gravel and river rock along the edge, always being careful to make sure nothing looks like it's in a straight line.

Next, I'll spread a little gravel out several inches onto the surrounding ground and may add a few more rocks to make sure the transition from the stream to the surrounding ground looks seamless, gradual and natural. (Some people use mulch to blur the edge, but I've found that mulch will wick water out of the stream better than most anything else. And if I *do* use mulch, I'll do my best to keep it away from the edge of the liner.)

On his job, I spent fully half a day making these tiny (but critical) adjustments. It's usually at about this point that the customer comes out and drinks it all in. I watch their reactions very carefully: If I've done my job, they will be impressed (if not entirely blown away) by the effect.

In this case, the customer was *extremely* involved in the closing stage. In fact, he helped create the seamless edge by installing the surrounding plants. Working with my Whispering Crane co-founder Richard L. Dube, the client had selected some 50 species of plants to surround the stream, including a variety of conifers, hollies, perennials and shrubs.

Streams such as this one are difficult and require large amounts of patience and attention to detail. If you want to build streams that have a chance at looking natural, sound great, and function properly, you must take pride in your work. Doing one well gives you a great sense of accomplishment – although I can't say that I'm ever truly satisfied.

The big question will always be, of course, is the client happy? That was apparently the case here, because I had a check in my hand before I had a chance to ask for it.

As the plantings have grown and I've returned to make a few more minor adjustments, the stream has become, as intended, a true thing of beauty. It can't rival Mother Nature for streamcraft, but when you do your best and take your time, the resulting stream speaks for itself – and even sings a little.

Managing Settlement

Settlement of the surrounding ground is inevitable in any stream project, so I always include enough cash in my bids to cover two post-completion visits.

I'll come back a week or two after the stream has been completed to make sure the water is staying put and that nothing has moved out of place. I'll make adjustments as needed, such as moving stones or adjusting pea gravel and river rock.

I make a second return visit after the first rain. This is when you're most likely to see the effect of runoff from the surrounding ground or any erosion or undermining of the liner. At this point, if I need to buttress an edge I'll lift the liner, pack in the requisite dirt or stone and then reposition the stream stones.

On the project pictured in the accompanying text, I found three small areas where settlement was allowing water to trickle out of the stream. As I've emphasized here, water is unpredictable and opportunistic, so you probably have to be more on the lookout for tiny trickles than areas of large spillovers.

Nobody wants to get a call from a client about a stream overflowing its banks and flooding the yard or a neighbor's yard. Nor do you want to get a call saying that water is being lost but the client can't see where it's going; here, you need to be patient and look yourself for telltale signs of moisture.

So if you get into streams, be sure to plan for these follow-up visits to keep things flowing smoothly within the streambed you worked so hard to establish.

– R.A.



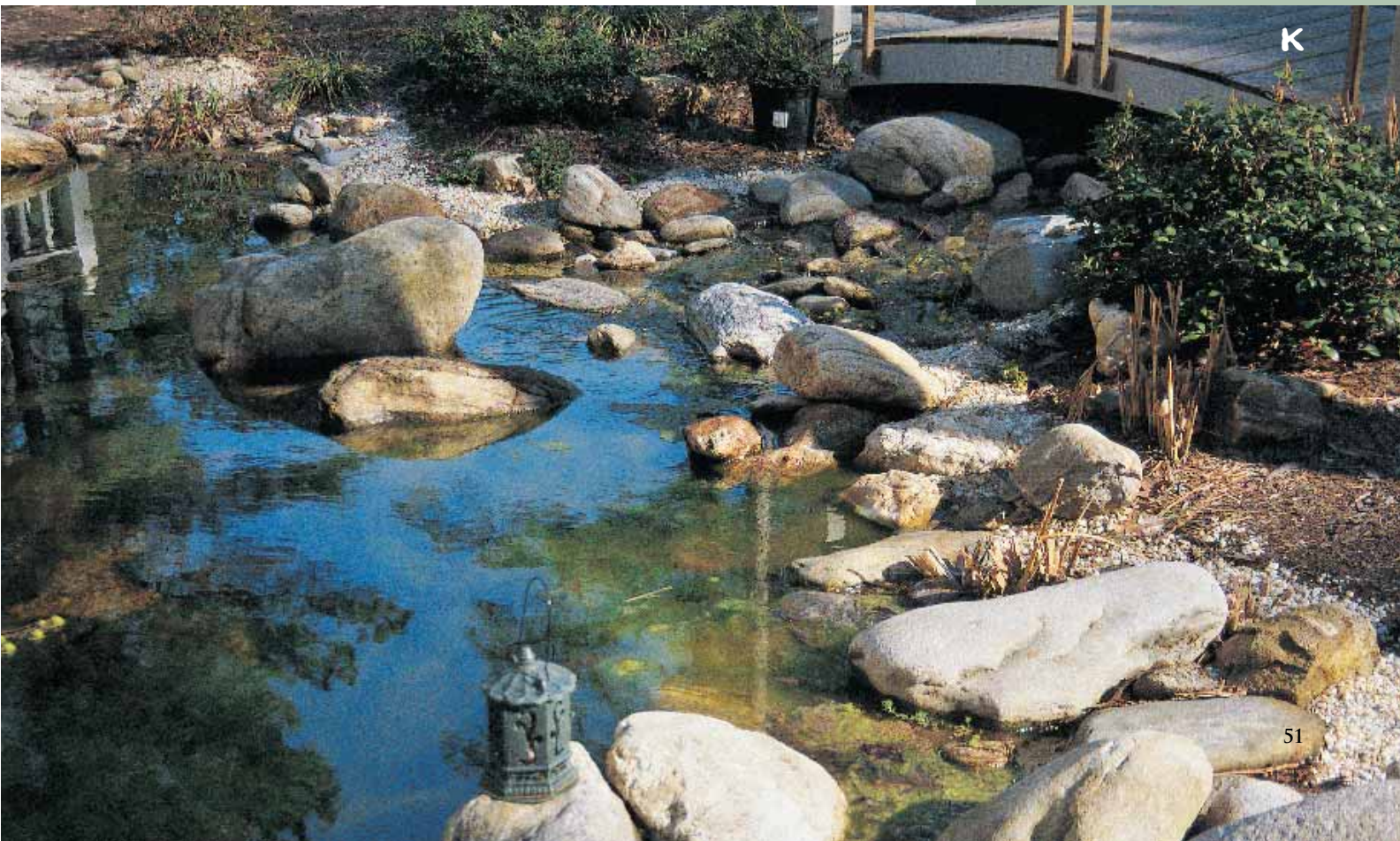
Keeping It Clean

Nothing will rob a stream of its beauty faster than dirt. That's why I hose off all of the stones I place in a streambed before installation and then rinse them again in my trial run: It's important to keep as much dirt out of the system as possible to avoid clogging the pump or taxing the bio-mats in the filtering system. Also, you prevent any build-up of a film on the stones and plants.

When rock is delivered, I always try to put it on a hard surface, such as a driveway or sidewalk, or place it on a tarp so that it won't spend time sitting on the ground getting dirty. Even if the rock is delivered on a pallet and stays there until I use it, I'll hose it off before putting it into the stream.

—R.A.

All flowing water eventually finds its way to a larger body of water. Although we've focused mainly on the streambed in this series of articles, as much attention was paid to getting details right with the pond and its edges (J). Note the several stones that break up the plane of the water's surface (K). Not only do these "islands" add to the natural impression: They also provide shade and shelter for the fish. Add in a nice footbridge and the composition is complete.



There's no rule that says installing realistic faux rocks has to be difficult. In fact, states Rock & Water Creations' Rodger Embury, if you let nature do the detail work, making faux rocks believable is within reach of almost any contractor who knows his or her way around rebar and gunite. In this pictorial, he demonstrates the process by using pre-cast rock panels to create rock faces and cantilevers in and around watershapes.

Ins



tant Geology

By Rodger Embury

Some may disagree with me, but I don't see faux rockwork as a "sculptor's art form." For more than 25 years, I've made sure that Mother Nature is the one who does the detail work; what I do is take copies of her artwork to job sites and install them in creative and interesting ways.

A long time ago, I developed a method of making castings of real rocks using my own formulation of fiberglass and epoxy. These are exact replicas of the real thing: Once mounted on steel structures in swimming pools or other hardscape applications, the panels are blended together to make artificial rock formations that take full advantage of Mother Nature's eye for detail and texture.

I don't mean any disrespect to people who make their faux rocks on site and acknowledge the fact that trying to recreate with your hands what nature does through the eons is no small feat. But I'd also say without hesitation that using rock castings is the only sure-fire way to make certain the work looks real each and every time.

TAKING IT EASY

For 20 years, our firm used this technology strictly for our own projects. We've installed rockwork on pools and other watershapes throughout the United States and around the world using our inventory of rock panels – and we've done it in an endless array of combinations and configurations.

These days, we still do a good bit of rock design and installation work, but we've also made the panels available to contractors for use in their projects. Although this is a relatively new direction for our business, so far the people who've adopted our method are having success with it – and say they enjoy skipping the labor-intensive processes involved with creating their own faux-rock formations from scratch.

The best thing about what we do is that it starts with nature: The rocks are selected in the field and come in an array of surprising shapes with fascinating contours, cracks and crevices, and the process of finding these specimens often sends me hiking through the hills and canyons of California and elsewhere searching for interesting rocks and formations to copy.

When I find something that catches my eye, I'll bring in my crew and make an impression of the rock structure. And this means more than individual boulders or stones: We're after whole rock *structures*, not just isolated shapes. Back at our shop, we use these molds to create exact replicas of the originals. Once on site, we bring in finishers who color and do the final texturing on the panels to ensure their realistic appearance.

It's a neat process, but the best of it is that, when we step on the job site, the hardest part is done. All that's left at that point is the installation and finishing, which is what this step-by-step pictorial is all about.

Note: With the exception of the image on the opening pages of this article, the photos here were all taken on the same project; in some cases, however, various stages of the process were captured in different places around the job site.



A



Gunitite and Steel

We backfill our rock panels with concrete – a significant issue because the weight of the rockwork requires proper structural support. This calls for preplanning and the designing of generous steel support into the shell and into our rockwork.

In the case of the residential installation shown here, the bond beam was significant-

ly widened to accommodate the rockwork's load. The beam slopes toward the vessel from the back edge to preserve the integrity of the shell's circumference while giving us room to set up our rockwork and the extensive steel cages we position behind the panels before backfilling.

As seen here, the shell already has been treated with three coats of waterproofing Thoroseal (A). We carefully followed the label instructions, applying a single coat each day in a three-day period. Next, the panels are locked into place with steel cages tied to the shell's steel (B).

As shown here, the cage of #4 bars will support a two-foot cantilever section in the watershape. It is important that the steel be part of the pool structure not only for strength, but also to provide for proper bonding. (In cases where we need to core drill and dowel the steel into place, we run a separate bond wire from the new rebar to the watershape's bonding bus.)

B



Continued on page 56

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Anchored in Place

The method I use for mounting the rock panels is pretty straightforward: Anchor fittings mounted in the gunite accept threaded tie rods of varying lengths that extend through the face of the rock panels.

We start by hoisting panels into place and then use a hammer drill with a 5/8-inch drill bit to create holes in the panels that reach through to and mark our positions on the gunite beyond (C). After drilling corresponding holes in the shell, we place 1/2-inch, drop-in anchor fittings in the gunite (D). The anchor is set with a drift pin that, once it is hammered into the anchor to set the expansion bullet, locks the anchor in place. Once they're all set, we're ready for panel installation.

We typically work in four-foot increments for ease of mounting and backfilling. Here we see the 1/2-inch threaded rod and its nut and washer being inserted through the panel into the corresponding anchor (E). Once the alignments are straight, we secure the rock panel to the shell using stainless steel all-threaded rod, washers and nuts (F) and then seal the rod in place with a watertight sealing caulk.

Continued on page 58



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– R.E.



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Extra Support

Because of the nearly two-foot cantilever, this section of rock face requires temporary support during the backfilling stage in the form of 2-by-4-inch wood framing (G). The need for this support is obvious: We'll be pouring a large amount of concrete on top of the panel before we're done (H).

Before we get to the backfilling, however, we use rapid-set cement to lock in bottoms and sides of the rock panels (I). If any of the spaces between panels exceeds four inches, the gap must be bridged with wire mesh.

Continued on page 60



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Filled and Finished

The key to the finished appearance of these panels is blending them together along the seams and effectively hiding the nuts, washers and rods.


As mentioned, the panels are joined together using quickset cement troweled into the spaces between the boulders. Once the panels have been backfilled, we apply a rich, one-to-one mixture of gray cement and sand, feathering it over the seams. While this cement is setting, special embossing pads are used to create a detailed imprint in the cement and visually blend the seams with the surrounding panels and their textures.

The process is simple: A releasing agent is applied to the topcoat of cement (J) that enables the installer to imprint the cement using a stamped embossing sheet – without having the cement stick to the rubber sheet (K). Note the way we pick up details from the boulder and carry small lines and cracks into the embossed area (L) and pay special attention to hiding the anchors.


The overall effect is compelling: Here we see three installed panels once the concrete has set and the supports have been removed (M). Note the natural sedimentary stratification – and a remaining anchor bolt to be disguised!



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COMPACT GARDEN FOUNTAINS

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HADDONSTONE (USA) LTD. offers literature on its new Arcadian Garden Features line of products. The line includes fountains and waterfeatures that are affordable, stylish and easy to install, from pebble fountains with an array of centerpieces to self-contained fountains in various shapes and sizes as well as trough fountains and systems designed to work with swimming pools. **Haddonstone (USA) Ltd.**, Bellmawr, NJ.

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ENVIRONMENTAL COATING SYSTEMS offers the All Deck Coating System, an all-in-one waterproofing and traffic coating for use over just about any surface, from newly poured asphalt or wood to new or old concrete – and even other coatings. The material is particularly suited to deck graphics with sharp, fine lines or curves and unusual colors. It also protects any walking or driving surface from heavy use and extreme temperature changes. **Environmental Coating Systems**, Santa Ana, CA.



PRODUCT-LIABILITY ASSISTANCE

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32-FUNCTION CONTROL PANEL

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LAARS AND JANDY POOL PRODUCTS has announced the introduction of its new AquaLink RS OneTouch control panel. The new system, which has a simplified "drop down menu" user interface, allows a pool and spa owner to control up to 32 backyard functions from inside the home and to create an entire environment using just one button. The unit's design features a paintable faceplate to fit easily into any interior decor. **Laars and Jandy Pool Products**, Petaluma, CA.

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POND-QUALITY REFERENCE MANUAL

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NEW POOL-LINER PATTERN

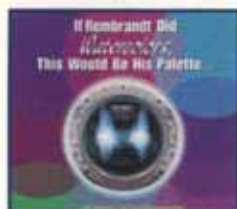
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PLASTIMAYD has added the new Blue Flamenco tile pattern to its UltraMayd line of pool liners. Backed by a 15-year warranty with full, 100% replacement for the first 3 years, these liners blend lavender and blue colors to imitate the hand-painted tiles of southern Spain. All UltraMayd liners offer increased resistance to chemicals, heat degradation and ultra-violet rays with minimum plasticizer loss – thus increasing liner life by up to 50%. **Plastimayd**, Clackamas, OR.



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COME SEE US AT THE SHOWS!

Mark your calendars! The staff of *WaterShapes* will be on hand for the fall's two biggest and best watershaping events – the **American Society of Landscape Architects' Expo 2000** (October 28-30 in St. Louis), and the **National Spa & Pool Institute's International Expo** (November 8-10 in Orlando).

For both events, we'll be setting up **Literature Distribution Centers** featuring brochures, flyers, catalogs and other sorts of information from many of our advertisers. We'll also be ready to answer any questions you might have about the magazine itself – and pick up any feedback you have to offer us about the magazine and its direction.

We'll see you there!

☐ ASLA Booth # 322

☐ NSPI Booth # 635

WATER SHAPES



that looked best to my eye.

I'm patient with the process – and persistent: I've found that when positioning boulders, an inch one-way or another can make a huge difference.

DOWN TO DETAILS

Once I had the boulder right where I wanted it, we raised it back up and placed a rich mortar bed under, over and around the block shims. Now we lowered the

stone back into its final position and hand-grouted it as best we could around the sides and back using a grout bag.

Once the stone was set in place on top of the shelf, I went back and extended a steel cage from the original shell to surround and support the boulder (A). In this case, I doweled in a cage of #3 and #4 rebar, then tied new to old with bonding clamps and copper bonding wire (B).

After wrapping the stone to keep it

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clean (C), we shot gunite into this secondary cage to create benches, steps and a ledge as a seamless visual base for the boulder (D). This filled all voids and effectively locked the boulder into permanent position in the shell structure. We groomed the gunite, feathering it in such a way that the pool finish will run right up to the boulder (E).

I allow the gunite to set for 14 days,

sending someone (not the client!) out each day to wet it down to slow the hydration process and create a stronger structure. After the whole thing is set, we'll go in and wash the boulder with a mixture of muriatic acid and water to clean it up.

The finished effect (F) is a stone that is surrounded and nestled in a pool structure, rather than plopped down on top of it!

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



Bold Outcroppings

By David Tisherman



Let's talk about really big boulders – the five- to eight-foot kind that weigh in at two to five tons apiece – and how they should be integrated into watershapes.

The whole process of placing these big boulders begins with the design of the pool and relates to the kind of scale you're trying to achieve. Big boulders make other features seem small by comparison and can often overwhelm (rather than accent) a design if their use isn't balanced and appropriate.

Next come the soils and geology reports – and the budget. The experts will tell you what the soil can handle in terms of weight; the budget tells you if you'll have the resources you need to bring in truly large stones and build the kind of structures the experts tell you you'll have to build. (I cannot stress this point enough: If the surrounding soil will not support the anticipated weight, then large boulders should not be used unless the budget lets you support them properly.)

Once all of this background information has been collected, I take it to a structural engineer who will design a shell structure capable of supporting the weight of the boulders we've selected. On this job, for example, our desire to support a boulder weighing approximately three tons called for installing a structural

bench or shelf for the rock as part of the pool shell using #5 and #6 rebar.

Doing it this way takes planning – but it makes all the difference.

GETTING IT RIGHT

Lots of people who install rocks tend to put them right on top of the bond beam without considering the surcharge – that is, the extra pressure the weight of the boulder puts on the shell. Or they'll put a boulder behind the beam, again without considering the surcharge it places on the back of the shell. Not only do these approaches represent bad engineering, but the result also looks unnatural – as though the boulder were nothing more than overgrown coping.

I take a different approach, installing the rock on a subsurface shelf fully enclosed within the pool's bond beam so that the shell maintains its integrity and the boulder looks like a natural outcropping rising out of the water. The idea is to make it look as though the stone was there first, well before the pool was even considered.

In this case, we shot the shell with 4,000-psi, Type 5 concrete formulated specifically for highly acidic soils – another key piece of information that surfaced in the soils report. Although the building department only requires 2,500-psi concrete, I went with 4,000 psi to add strength and further increase the gunite's resistance to the corrosive effects of the soil.

After we had coated the area of the shelf with five coats of Thoroseal and plaster to completely waterproof the shell and prevent any mineral leaching, we brought in an 18-ton crane to lift and position the stone. In preparation, I had grouted several CMU masonry blocks to create shims I could use to raise and lower the stone or change its angle.

When the time came to position this stone, I jumped into the pool and fine-tuned the placement with the help of the crane operator and three or four workers. I set the blocks in what I thought would be the right positions and then had the stone lowered into place. I had the crane operator raise and lower the stone several times, repositioning the block shims and turning the stone slightly until I was satisfied that I had it in the position

Continued on page 67



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