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DESIGN CONCEPTS



Jeffrey D. Brauer is a licensed golf course architect and president of GolfScapes, a golf course design firm in Arlington, Texas. Brauer, a past president of the American Society of Golf Course Architects, can be reached at jeff@jeffreydbrauer.com.

SHOT VALUES

f S hot Values" is a maddeningly vague term that I have been trying to define for years. The book "Golf Course Design" (by Geoff Cornish and Robert Muir Graves) says shot values are a "reflection of what the hole demands and the relative reward or punishment it metes out for good and bad shots... Each hole must be designed to balance risk and reward," and as "related to difficulty and allowable margin for error."

The practical question when trying to assess, design or redesign an actual golf hole is exactly how "shot values" link risk and reward, margin for error and punishment appropriately. Given the wide variety of golf holes and courses, it's obvious there is some latitude, but here are my criteria for good shot values.

DOABILITY

Golfers should be able to finish every hole. It's wrong to demand a shot that is doomed for failure (for example, a 320 yard forced carry), beyond reasonable expectations of accuracy (a postage-stamp green on a long par 4) and even golfer's comfort levels, like aiming over OB (the famous Road Hole is the rare exception).

We know pros need width about 10 percent of the total shot length (for example, 20 yards wide for a 200 yard shot) and amateurs need 15 percent. Most greens should be sized accordingly. If golfers must carry a hazard, it should be a "doable" distance, whether 270 yards for long hitters or 90 yards from the forward tees.

RISK/REWARD

Few will risk strokes challenging hazards if nothing will be gained, but golfers are more likely to carry water if success gains one and possibly two strokes. On most holes, hazards can be fairly benign, allowing recovery about half the time. Otherwise, golfers will just play safely away from hazards, which is boring. This is the most delicate part of the equation and can vary from the first hole to later holes, when a match may be on the line.

PROMOTE SHOT SHAPING

A good test of golf "requires all the shots" which are created best when conditions including wind direction, ground slope and target angle, all strongly suggest a certain shot, like a fade.

OPTIONS

Holes may strongly suggest shots, like a draw, fade, high or low shot, high spin shot, etc., but there should be decent options and landing zones for those who can't play that shot to hit at least some part of the fairway or green, even if not all or the best parts.

BAIL OUT ABILITY

Since any shot will be beyond the ability of someone, there should nearly always be an option to play safe somewhere close to the target.

PROPORTIONAL PUNISHMENT

Playing safe should avoid most hazards, and penalties should be greater to players who miss a challenge shot, especially when trying to gain strokes on Par 5 holes, and in general, for shots that miss a shot versus ones that miss by a little.

The practical question when trying to assess, design or redesign an actual golf hole is exactly how "shot values" link risk and reward, margin for error and punishment appropriately.

PROMOTE CREATIVITY

Hearing Tour pros recite their rounds as "Driver, 5 iron. Driver, 9 Iron," sounds boring. The architecture should promote alternate shots to keep golf fun, including bump and run, "bounce it here to get it there" type shots.

BALANCE

There ought to be balanced shot demands on individual holes and throughout the course. Most holes should blend hard, easy and medium difficulty shots. If the tee shot is hard, the approach should generally be easier. And the holes should take turns giving advantage to long hitters, accurate drivers or good chippers throughout the match. "Balanced balance" (as opposed to nine hook holes on the front and nine slice holes on the back) is even better in most cases.

VARIETY

There should be differing challenges and/or margins of error. Some holes should be easier and some harder in different aspects – fairway width/tee shot accuracy, varying greens' sizes and contours to challenge approach shots, putting difficulty and varying recovery types and difficulty, for example.

These are my definitions of shot values.

Others may vary – and courses can vary from these and still be exceptional exceptions – but I believe most good golf courses fall somewhere in these precepts. **GCI**

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CFO^{*} Chief Fishing Officer

Gary Grigg's journey through the industry has taken him from the potato fields to dozens of golf construction sites to the boardroom of one of the market's most successful superintendent-driven companies...and he hit a few trout streams along the way.

By Pat Jones

"I'm willing to bet anything that I'm the Jonly golf course superintendent in the world who's had two papers published in the American Potato Journal," says Gary Grigg.

I, for one, am not taking that bet. There are many strange points of entry into this profession, but I'm fairly sure Grigg is unique in transitioning from corporate spud-growing to the pinnacle of turf management.

Grigg is, of course, the vice president, head agronomist, co-owner and main evangelist for Grigg Brothers. For the past 15 years, he's been the public face of the company and the person who's probably done the most to change attitudes about a category of bionutritional products that were once largely dismissed as snake oil.

His unlikely journey began in the miniscule town of Vale in eastern Oregon, just across the river from Idaho. His father and uncle had started the first incarnation of Grigg Brothers in the 1930s, selling fresh sweet corn and produce. The little company prospered and the Grigg family relocated to the relative metropolis of Ontario, Ore., where Gary attended high school, played ball and began learning the business of agriculture.

In 1950, the company made a big move into potatoes and changed its name to Oregon Frozen Foods. By 1955, they had grown more and changed the name again, this time to Ore-Ida Foods. You may have heard of it. The family sold the company to the giant H.J. Heinz Corp. in 1964, but the Ore-Ida name remains synonymous with frozen spuds. Oh, and his uncle coined (and wisely trademarked) the name "Tater Tots." Thousands of schoolchildren should thank him each day. Gary finished high school and, predictably, headed off to study the art and science of spuds – specifically agricultural entomology – at Utah State. He met and married his wife, Coleen, and they embarked on four decades of moving and changing as Gary's career required. Initially he worked for a year for Ore-Ida before enrolling at Michigan State to get his masters in agronomy. A fellow named Dr. Jim Beard ran the graduate agronomy program at MSU in those days and Gary was introduced indirectly to the world of turf.

With master's in hand, he worked for a year for Heinz but his father had become involved in a real estate development in Michigan called Lake Isabella. Despite knowing nothing about day-to-day turf management or construction, Gary was recruited to build the golf course. "I had to have been the first golf course superintendent ever who didn't know anything about golf and had a course to build," recalls Grigg. Fortunately, that's where Bruce Matthews, the noted golf course architect who designed Lake Isabella, came in.

"Bruce told me growing grass couldn't be any harder than growing potatoes...but that wasn't true. It was a steep learning curve." Matthews, who was originally a superintendent by training, introduced Grigg to the local association and encouraged him to join GCSAA. He quickly became involved, was among the earliest certified superintendents and, of course, eventually became president of the national in 1995.

He stayed at Isabella for five years until his father sold his interest there. His self-taught construction experience helped him land at the Lodge of the Four Seasons in Missouri's Ozark Mountains where, with an in-house crew, he built the resort's famed Robert Trent Jones course and got to know the grand old man of course design. Grigg remained friends with Jones the rest of the architect's life and was an honorary pallbearer at RTJ's funeral.

After five years at the Lodge, circumstances changed and Grigg decided to give teaching a try. He spent a year on the Idaho State faculty and loved it, but couldn't make ends meet on a professor's salary. He moved to Tucson to maintain a course there and met another designer, Bob von Hagge, who brought him onto a 27-hole, fast-track project in Albuquerque. That's where Grigg connected with Kindred/ Watts construction and began a 9-year period where he oversaw construction of more than 15 courses, including Ventana Canyon in Tucson, the Fazio course at Barton Creek in Austin, Lone Tree in Colorado and the Art Hills course at Bonita Bay. While working on the Hallbrook Farms Fazio project in Kansas City, he was contacted by a developer who wanted him to build and manage Shadow Glen GC in the area. Kindred/Watts was coming apart thanks to economic woes in Texas, so he signed on at Shadow Glen and built another Golf Digest "Best New" course working with Tom Watson, Tom Weiskopf and Jay Morrish.

Five years later, the course was turned over to Club Corp which made it clear they didn't pay superintendents what Grigg was making, so he hooked up with architect Jim Hardy and his partner Peter Jacobson on several projects before landing at Naples National GC, a great Hurdzan/Fry layout. A few years later, he moved up the street to Royal Poinciana GC to do a 36-hole reconstruction and stayed on to maintain it...his only real non-construction superintendent job. It would be his first and last position in that role.

Just as Grigg settled into life as a regular old golf course superintendent in Florida, his brother Mark approached him to test a product that had been developed by a researcher at Utah State (see sidebar). Grigg threw some of the product out and was blown away by the results. It occurred to the brothers Grigg that maybe, just maybe, they could start a business and sell the stuff.

That was in 1995 and today that "stuff" has become a staple of many course maintenance programs as Grigg Brothers grew and prospered just like the company of the same name founded by their father and uncle had a half-century earlier.

Now, as the company celebrates its 15th anniversary, we caught up with Gary to talk about his transition from the profession into the supply side, overcoming the bias against bio products, and what his plans are as he approaches his 70th birthday and the prospect of spending more time fishing for trout than customers.

YOU'VE HAD MULTIPLE ROLES IN THE BUSINESS OVER THE YEARS. WHICH DID YOU LIKE BEST?

Construction. I built a few dozen courses during my career and I loved it. What I don't

The Tale of the Brothers Grigg

The 15-year-long story of the company built by the Brothers Grigg is a fairy tale in one sense only: It was once considered a fantasy that a company co-founded by a golf course superintendent would become a multi-million-dollar enterprise and a household brand name in the turf market. The genesis of the company dates to the early 1990s when Mark Grigg was selling a line of probiotic foliar products into the ag industry in the West. Among the products was an environmentally friendly liquid nutrient product that was, in 1992, purchased by Toro and relaunched as BioPro. When Toro divested BioPro in 1994, Mark Grigg had lost a line to sell but gained an keen interest in the concept of foliar feeding for plants.

Soon thereafter, Mark met Dr. Gene Miller, a plant biochemist from Utah State University. Miller had developed some interesting foliar technology for farming. Mark was interested in the concept and, almost as an afterthought, shipped some test product to Gary who was a superintendent in Naples, Fla., at the time. "He asked me to test it on turf," Gary recalls. "When he called me later and asked if I thought it had potential for crops, I said 'Screw ag, you outta see what this stuff is doing to my grass!" They went back to Miller and licensed the product for turf. Thus Gary's Green and the Grigg Brothers company were born. But the company needed investment. In another fairy tale moment, Dean Robinson, Gary's green chairman at Royal Poinciana GC overheard him discussing the need for start-up cash with Mark. Robinson apologized for eavesdropping but said he was intrigued. He then quite literally wrote Grigg a "substantial" personal check to get their fledgling start-up going. Later Bruce Williams, a fellow GCSAA past president and longtime friend, became an investor and board member in the company.

The brothers then took on the biggest challenge facing any new company: distribution. They joined the Independent Turf & Ornamental Distributors Association, went to the group's annual meeting, shook lots of hands and quickly picked up a dozen or so relationships. Within a few years, they'd built a network of more than 60 local distributors who were willing to give the time and attention a "niche" product demands to grow sales. "The key for us has been good distribution and a science-based approach," says Gary. "We spent a lot of money on research... I wanted to show people data and prove how much of our ingredient actually gets into the plant. That's what I would have demanded when I was a superintendent."

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love is when it's done and the members come in and the pro becomes god. Suddenly you don't get a whole lot of credit. That might not be a popular thing to say but I'm retired (as a super) and I don't care.

I've always liked to teach, too. I still do it (at industry conferences and distributor meetings). All those sales meeting I still do are basically teaching. I think that all the talks I've done have helped the whole foliar industry. As Steve Mona always says, a rising tide lifts all boats. And that's fine. I don't care who we help, as long as what I'm saying is science-based.

WHAT ONE THING WOULD YOU HAVE DONE DIF-FERENTLY IN YOUR CAREER?

I spent most of my life focused on career. I wish I'd spent more time focused on my family. Johnny Miller said (in a speech at the GIS) that no success in life can substitute for success in the home. I put my kids through hell by moving them around. My daughter went to four different high schools in four years. I regret doing that. I have a lot of respect for guys who take jobs and stay. Having said that, I wouldn't be where I am without moving around.

SO HAVE YOU DIALED BACK YOUR CAREER FOCUS NOW?

Not really (*laughs*). I'm 69 and still working hard. Coleen keeps asking me what my exit strategy is and I really don't want to answer.

DID YOU EVER THINK GRIGG BROTHERS WOULD BE THE INDUSTRY PLAYER IT IS TODAY?

Absolutely not. We named our first product Gary's Green as a joke. We really didn't think it would go anywhere. It was supposed to be just Mark and I selling it – and to me it was just a way to supplement my retirement income – but then we picked up good distribution and it took off. Mark's the entrepreneur and he may have felt differently, but I liked having a paycheck so it was really hard to quit (the profession) completely, but I did in 2000. I've enjoyed every minute, but I never thought it would be like this.

WHAT ADVICE DO YOU HAVE FOR SUPERINTEN-DENTS WHO MIGHT THINK ABOUT STARTING THEIR OWN COMPANY?

Go for it. You always hear people say "don't bite off more than you can chew." My father's saying was, "always bite off more you can chew and then figure out how to chew it."

It takes money though. You have to be smart and have capital and investors lined up or get lucky and find one like we did.

WHY DID YOU NEED INVESTORS? WHAT ABOUT ALL THAT TATER TOT MONEY YOU INHERITED?

There wasn't any to inherit. As the old saying goes, my dad spent half his money on wine and women and wasted the rest on sheer foolishness.

WHO WOULD YOU SAY HAS INFLUENCED YOU MOST OVER THE YEARS?

Bruce Matthews (the late golf course designer) is pretty high on that list. He took me under his wing and taught me a ton about turf and the golf business when I was just starting. He also got me into GCSAA – he literally took me to my first chapter meeting.

Also Harold Koplar from the Lodge of the Four Seasons. He took a chance on me and basically let me build the Jones course there with a handful of guys for \$1.2 million, which was a lot of money at the time. My GM there, R. Scott Morrison, is a fantastic guy who really taught me a lot about how to do things right. I'd also say architects Bob von Hagge and Andy Banfield . And of course Tony Kindrick and Doug Watts. They gave me a chance to learn just about everything about construction I could learn and they let me work with Jim Hardy, who was an outstanding guy and a great boss.

Last but not least would be Dean Robinson, my green chairman from Royal Poinciana. He was a great friend who personally gave us the money to get the company started.

AREN'T YOU FORGETTING SOMEONE?

Oh man... obviously Coleen. I met her in college in 1962 and we were married in '64. She came from a wonderful family and has just kept me on the straight and narrow forever. Whenever I get mad, she calms me down. She's done that hundreds of times. She was also a great ambassador for GCSAA. The wives don't get enough credit for everything they do to support us. And she also put up with all the moving around.

WHAT'S THE MOST STRIKING THING ABOUT HOW THE PROFESSION HAS CHANGED OVER THE YEARS?

Obviously the biggest change is the technology. It's unbelievable how much information is available from a quick Google search. I don't think people coming into the business today may have all the agronomic background they need, but they can sure log on and learn it. Just consider computerized irrigation systems and how much of your course you can run from a cell phone now. It's amazing.

But, the downside is that in 1968 I mowed greens at ¹/₄-inch and they were healthy. The leaf is the manufacturing plant for the grass. The plant just doesn't get enough nutrition at today's mowing heights. Pushing for ultra-fast green speed is incredibly detrimental. But, that's what golfers want so we have to deal with it. The members aren't going to change their attitude.

WHAT WAS THE BEST SPEAKING ENGAGEMENT YOU EVER HAD?

In 1992, when I was on the GCSAA board, Steve Cadenelli was president and he assigned me to go to England and speak at their national conference. It was my first foreign speech and first real overseas trip. I had a great time! I flew into London, then took a train, then a bus, then a cab. Later on I figured out I could have flown into Manchester and been right there. But the level of interest and the intensity of the questions and discussion was a real eyeopener. I made a lot of friends and it got me involved in BIGGA and eventually became a master greenkeeper through them.

OF ALL THE COUNTRIES YOU'VE VISITED, WHICH WAS YOUR LEAST FAVORITE?

I did not enjoy the time Bruce Williams and I went to Jakarta, Indonesia for the old Golf Asia show GCSAA tried to launch. Randy Nichols sent us over there and we met with the Indonesian greenkeepers group and visited some courses, but the country was just overrun with people and dirt. The superintendents were impressive and trying to improve, but I wasn't enamored with the country.

WHAT ADVICE DO YOU GIVE TO YOUNG PEOPLE INTERESTED IN THE PROFESSION?

Number one, improve your agronomic skills. They aren't the strongest agronomists these days. Maybe they don't have to be because they can hire someone who is. I think a lot of them might listen too much to company reps – admittedly including mine. The two-year schools are okay, but I'm just not sure they get enough agronomy. The four-year schools do a better job.

I will say that young superintendents tend to be more technologically advanced and better communicators – which is extremely important – but they just don't have the agro-(continued on page 74)

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57

By John Torsiello

TARGETING TOPDRESSING

While the jury is still out on its ability to suppress disease, topdressing can contribute to a healthier soil profile.

Developing a sound topdressing protocol, matching it to specific course conditions and needs, and developing a system of monitoring it to insure optimum results can lead to healthier turfgrass. Whether topdressing can influence disease resistance is a matter of debate. material applied today, whereas mixes containing sand, loam and organic matter have been used in the past. Many superintendents have transitioned to a light and frequent approach, topdressing throughout the growing season instead of at increased rates in the spring and fall.

These more recent trends are well suited to managing organic matter accumulation without layering, improving infiltration rates and increasing surface firmness. An additional benefit just may be disease suppression, says Dr. John C. Inguagiato, assistant professor in residence, turfgass pathology at the University of Connecticut in Storrs.

"At one time, sand topdressing was believed to wound turfgrasses and enhance diseases like anthracnose," Inguagiato says. "However, recent research has demonstrated that routine topdressing can reduce anthra-

DISEASE SUPPRESSION

Straight sand is the predominant topdressing



ullug Recording to the season

cnose." For example, recent Rutgers University studies evaluated several sand topdressing rates and intervals ranging from none to 4 cubic ft. per 1,000 sq. ft. applied every seven to 42 days throughout the summer to determine their effect on anthracnose severity. These studies showed that various combinations of rate and interval can effectively reduce the disease. The most effective topdressing programs were those where sand was applied at 1 cubic ft. per 1,000 sq. ft. every seven days or 2 cubic ft. per 1,000 sq. ft. every 14 days. Alternatively, 4 cubic ft. per 1000 sq. ft. applied every 21 days was also effective, but it took longer to develop disease resistance.

The diminishing of anthracnose severity due to topdressing has been proposed to be a result of sand accumulating around the base of tillers resulting in a more favorable envi-

ronment for turf growth and increasing the effective height of cut, Inguagiato explains.

The effect of topdressing on other diseases is not as well understood. Reports on the effect of topdressing on dollar spot have been inconsistent. However, Inguagiato adds, sand topdressing appears to have little effect on dollar spot severity. Further research on the type of material used, rate and application interval are needed to determine the effect topdressing on dollar spot and other diseases.

Superintendents should be cognizant of several factors when topdressing.

"From topdressing research conducted for anthracnose, it is evident that an accumulation of sand in the canopy is required before disease reductions should be expected," Inguagiato says. "In the first year of these studies, topdressing enhanced the onset of anthracnose, although as sand

Many superintendents have transitioned to a light, frequent approach, topdressing throughout the growing season instead of at increased rates in the spring and fall.

I DOWN



When beginning a topdressing program it is possible a brief increase of anthracnose may result, researchers say.

continued to be applied disease was eventually reduced. Topdressing rates and intervals which accumulated sand most rapidly were the first to reduce anthracnose compared to non-topdressed turf, and provided the greatest level of suppression."

Therefore, when beginning a topdressing program it is possible a brief increase of anthracnose may result, Inguagiato says. Although continuing to topdress at rates and intervals sufficient to accumulate sand around the base of tillers and maintain this beneficial layer will reduce anthracnose severity in the long term, he says.

Proper topdressing methods can indeed suppress disease, says Scott Johnson, CGCS at Shadow Glen Golf Club in Olathe, Kan. "Topdressing is one of our many cultural tools that we have to improve putting surfaces and influence growing conditions for the turf," he says. "If you provide a favorable growing environment, then the grass is hardier and able to withstand some disease pressure. The frequent addition of sand to the putting surface allows sand to migrate down to the crown area of the plant. As the percentage of sand particles increases, it's reasonable to assume that air porosity would increase. And as air porosity increases, prolonged wet conditions within the canopy can be shortened, which reduces the duration of favorable conditions for disease outbreaks."

Michael K. Fabrizio, CGCS, director of grounds and golf maintenance at The Daniel Island Club in Charleston, S.C., isn't certain whether "disease suppression" is the appropriate term, but he says topdressing does create an environment that promotes healthier turf by improving water infiltration and oxygen in the soil. "Having healthier turf will make it less disease susceptible," he says. "Increasing

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water movement, so turf can dry out faster during rain events, and allowing more oxygen in the root zone should promote healthier roots and turf."

Turfgrass diseases are, of course, somewhat relative to the area of the country a course is located. Roy McDonald, superintendent at Hobe Sound Golf Club in Hobe Sound, Fla., says although his region's native soil is very sandy and he has very little disease problems on his greens, he believes proper topdressing methods lead to healthy turfgrass, and healthy turfgrass is more disease resistant.

"I could see a benefit with topdressing if you have poor base soil on your greens," he says. "The benefit of topdressing when having poor soil would be to ultimately improve your soil profile and cut down on disease. Too



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Proper topdressing makes the thatch layer on turfgrass less of a problem by allowing water, fertilizer and chemical infiltration

much topdressing can damage reels, which give you poor quality of cut and weakened turf and could lead to disease."

There are several factors to consider when topdressing, especially if you want to suppress anthracnose, move water off the top of the ground and avoid damage to the turfgrass, says Brad Sparta, superintendent at Ballyowen Golf Club in Hamburg, N.J. "You can bury your crown and kill your plant. There is more of a chance causing damage by over brushing or dragging. And I believe with certain mixes it could lead to increased disease. But with straight sand, I don't think it could."

Proper topdressing makes the thatch layer on turfgrass less of a problem by allowing water, fertilizer and chemical infiltration. As a result, it creates a healthier medium for the plant to grow in, a better and truer putting surface and more disease resistant plant, says Bryan Barrington, superintendent and general manager at The Golf Club at Oxford Greens in Oxford, Conn. But over topdressing or infrequent heavy topdressing can result in layering in the mat/thatch layer, he says.

"Ideally, one wants to topdress with enough material to match the growth of the plant throughout the growing season," he says. "Improper topdressing, such as mentioned above, can lead to ineffective control of protectants and nutrients by ineffective control of thatch, thatch will hold up nutrients and protectants, and the plant becomes susceptible to more disease issues."

In cases when topdressing is applied too infrequently, or at rates insufficient to keep up with the growth of the turf, thatch will accumulate at a faster rate than sand is being applied. As a result, Inguagiato says many of the benefits of topdressing will not be

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