

WIDE ROLLERS

Purists call them ugly; designers call them progressive. Either way, extravagant putter designs are here to stay. But exactly how are those increasingly bizarre head shapes supposed to help us hole more putts? **Duncan Lennard** has the answers.

While Sandy Lyle's golf didn't make too many headlines at this year's Masters, his putter certainly did. On Augusta's lubricious greens, the 1988 Masters champ wielded what looked like a paving slab with a hole in it. And he wielded it rather tidily, taking just 115 putts for the week on the way to his first weekend appearance since 2009. "It's not going to win any beauty contests," Sandy conceded, "but it's keeping the hands nice and calm and the mind calm – and with putting, that's a big help."

Though some might call it an ugly

duckling, Lyle's Black Swan putter will stand behind the ball on its own and has zero degrees of loft on the face. Although you could fit three golf balls against its yawning face, its key design trait is its utter disinterest in twisting when the ball is struck in the toe or heel. Engineers measure this resistance as a Moment of Inertia rating. The Black Swan's MOI is 23,000g/cm². By contrast, most other putters barely make it to 10,000.

The putter was designed by a former car technician and self-described putter engineer named David Kargetta, who has labelled pretty much every other putter you can buy as "just stupidly defective".

Needless to say, the putter designers for golf's leading brands disagree. They point to the fact that such a colossal MOI rating on a club that's travelling at around 4mph as it meets the ball could be described as overkill. But be that as it may, the Black Swan symbolises how function has taken over from form as the primary driver of putter design during the last few years. The neat, sculpted and compact Bullseyes, 8802s and Anser clones of the 20th century are being threatened by an invasion of bizarre exoskeletal designs, variously compared to cattle brands, instruments of torture or scowling animal mouths. Even



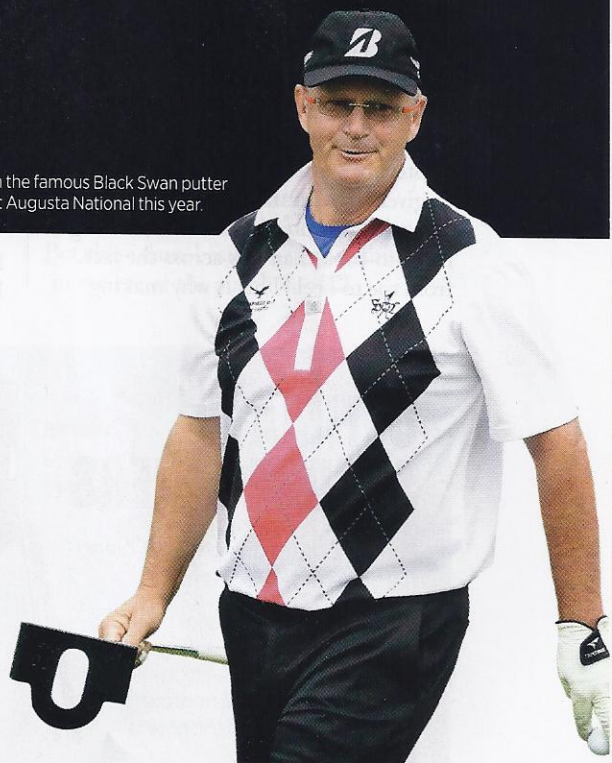
RIGHT: Sandy Lyle with the famous Black Swan putter that made headlines at Augusta National this year.

conservative and resistant-to-change Tour Pros are buying into the idea.

So what performance benefits do these new bizarre shapes offer? The two main areas are forgiveness – the putter’s resistance to twisting on off-centre strikes – and face alignment. As the Black Swan attests, the first of these is all about increasing the Moment of Inertia – and that means positioning weight as far as possible from the face. “Every putter and object has a centre of mass or gravity, a balance point,” explains Odyssey’s principal designer Austie Rollinson. “Throw a hammer in the air and it rotates around its centre of gravity.

With putters you try to get that in the centre of the blade because that’s where it’s going to be most stable.

“If you strike the ball in line with its centre of gravity – the sweetspot – the face will remain stable and square through impact. But when your strike moves towards the toe and heel, the face twists. That compromises both the aim of the blade and the amount of energy transferred into the ball – meaning off-line and off distance putts. If you increase the putter’s MOI, you can reduce this twisting. And that means getting as much mass as far from the centre of rotation as you can.” ▣



Odyssey's most striking example is the Sabertooth. Two curved, stainless steel fangs protrude from the toe and heel to create mass at the perimeter, while the putter's centre uses a lighter material. Present also in Scotty Cameron's Futura X, Nike's Method Core Drone and TaylorMade's Daddy Long Legs, these weighted rear prongs are fast becoming a staple of modern putter design.

But how important is MOI to putters? The man with the answers is Paul Hurrion, whose Quintic Putting Lab researches exactly this sort of thing. "Putts struck from the toe cause the face to open, while from the heel they cause the face to shut," Hurrion says. "Our research shows that a typical heel strike takes the face from square to 1.25 degrees shut, while a typical toe strike opens the face by around three-quarters of a degree. On an eight-foot putt, a mis-aim of just one degree will see you miss."

As for distance, Hurrion has established what he calls impact ratios – which define the relationship between impact clubhead speed and ball speed. A centred strike, for both heel/toe and top/bottom of the face, reveals an impact ratio of 1.71. That drops to 1.37 when the ball is struck low in the heel of the putter – basically the difference between the ball reaching the hole on a mid-range putt, or coming up short.

Hurrion, though, adds a proviso. "Everyone researches the stability of the head but they often fail to research the shaft. You could have the most stable, highest-MOI head in the world, but if you put a weak one-dollar shaft into it, that great head could be twisting and kicking all over the place."

In moving mass away from the face to bolster the putter head's stability and forgiveness, manufacturers are bound by one rule: the putterhead cannot be longer front-to-back than it is across the face, from toe to heel. This is why making



significant MOI gains tend to come at the expense of creating a wieldy head. But the ruling affords a reasonable extension back from the face – and designers have not been slow to grasp that that can help add not just MOI but also some pretty serious alignment lines.

In Hurrion's words, the average club golfer's ability to square the blade at set-up is "shocking". "Our testing showed that from 15-18ft they can easily be as much as a foot out from where they think they are aiming. It gets worse on breaking putts. Typically, on a left-to-right putt two cups outside the left edge, golfers will aim four cups outside and push it. On a right-to-left putt two cups

outside the right edge, golfers will aim one cup outside and push it again."

This is a big deal because Hurrion's testing shows that face angle at impact contributes up to 92 per cent of the line the ball starts, with swingpath having only a paltry effect. "Unless you can line that putter square," he adds, "it doesn't matter how well the putter performs."

Michael Vrska, Global Director of R&D at Wilson Staff, agrees. "Our designs focus on alignment because we believe it's the ground zero of many putting problems," he says. "MOI is a nice ancillary benefit. Lots of people have made putts with low MOI putters."

Wilson Staff's quest for a square blade

ULTIMATE STROKE SAVERS

Five elaborate designs that blend flamboyance with function

Blending visual devices for better alignment with extreme weighting for forgiveness on mis-hits, these putters will help improve your performance on the greens.



Wilson Staff Vizor

KEY DESIGN: Alignment aid devised to lock your eyes into a consistently correct position. Mallet weighting aids high MOI.

WHO'S USED IT: Padraig Harrington (in trials).

UNCHARITABLE DESCRIPTION: Headless penguin
RRP: £139



Nike Method Core Drone

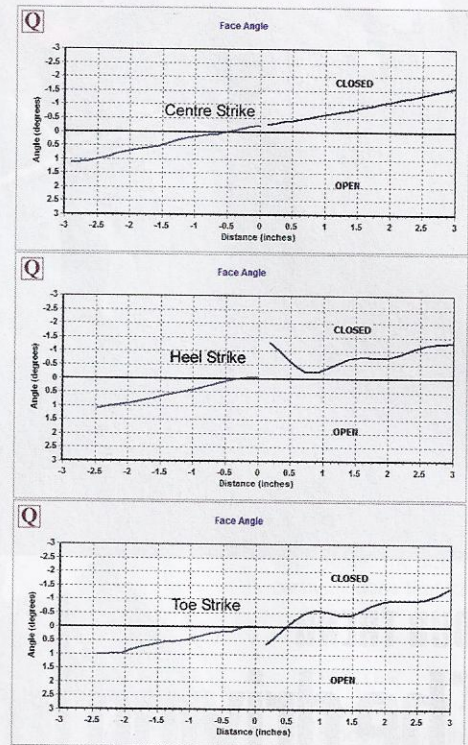
KEY DESIGN: A K-shaped head sees two wings, both weighted at the tips to prevent twisting on mis-strikes and to promote a pure swingpath.

WHO'S USED IT: Suzann Pettersen

UNCHARITABLE DESCRIPTION: Batman on a windy day
RRP: £110



LEFT: Odyssey's principal designer Austie Rollinson working on the design another high MOI putter. **BELOW:** Graphs from the Quintic lab show how off-centre strikes affect the aim of the blade.



is best showcased in its Vizor models. The unique-looking blade melds a traditional-looking Anser-like head with a futuristic red and silver alignment spur off the back, which folds back on top of itself. A slot in the top fold enables you to look through to the under-spur. If you see red, your head and eyes are in the wrong position. If all you see is silver, you are set. "This I-Lock technology design is all about positioning your eyes over the ball consistently. We don't see its looks as a negative. When people see performance benefits they'll adopt it."

Odyssey most famously used the symbiotic relationship between high MOI construction and bold alignment

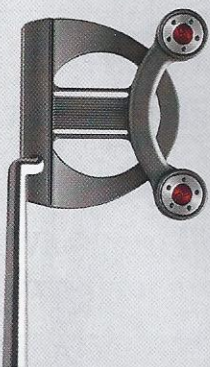
design in the TwoBall putter. "That was originally going to be a game improvement putter," says Rollinson. "It was basically Dave Pelz's three-ball putting aid in conforming shape. But then Paul Lawrie rolled one in through the Valley of Sin to win the 2001 Dunhill Links and Annika Sorenstam started winning with it. It was a putter that helped us realise that function was rising above form, even with Tour pros."

Odyssey's most striking alignment aids are featured in its DART line-up, which sees a bold white sight line flanked by two converging thinner lines. It may look like the paper aeroplanes we made at school, but Rollinson confirms that it's a

little more sophisticated than that.

"Those lines work on something called the Gestalt effect," he explains. "If we see part of a familiar picture, our brain automatically fills in the rest. Those three lines do not converge on the putter – they are angled to meet where the centre of the ball would be. They work in concert with the ball."

With its angular shape, rear weight port and monochrome chevron sight line, Odyssey's DART White Hot Pro typifies the modern putter. If its forgiveness and ease of aim can't be questioned, its aesthetics arguably can. But these days, beauty is very definitely in the eye of the putt holer. **GW**



Titleist Scotty Cameron Futura X

KEY DESIGN: Weights at either end of a curved rear bar, plus adjustable weights at both ends of the front sole – permit head stability.

WHO'S USED IT:

Adam Scott

UNCHARITABLE

DESCRIPTION: Frog with red-eye

RRP: £279



Odyssey DART Sabertooth

KEY DESIGN: Two curved fangs extend from the heel and toe to add stability, while two inner prongs borrowed from the XG7 aid alignment.

WHO'S USED IT:

Rocco Mediate

UNCHARITABLE

DESCRIPTION: Shot put pitchmark repaire

RRP: £99



TaylorMade Daddy Longlegs

KEY DESIGN: Tungsten weight ports at the rear heel and toe aid MOI; a heavier grip counterbalances the head to help a consistent path.

WHO'S USED IT:

Troy Matteson

UNCHARITABLE

DESCRIPTION: Two moths mating

RRP: £159