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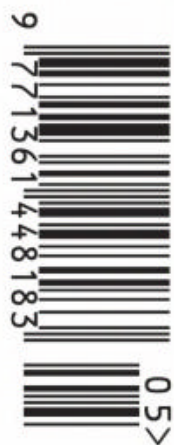
On the scene as Michael's son makes his F1 debut

SPECIAL REPORT

# MAKING McLAREN GREAT AGAIN

What will it take to wake Formula 1's sleeping giant?

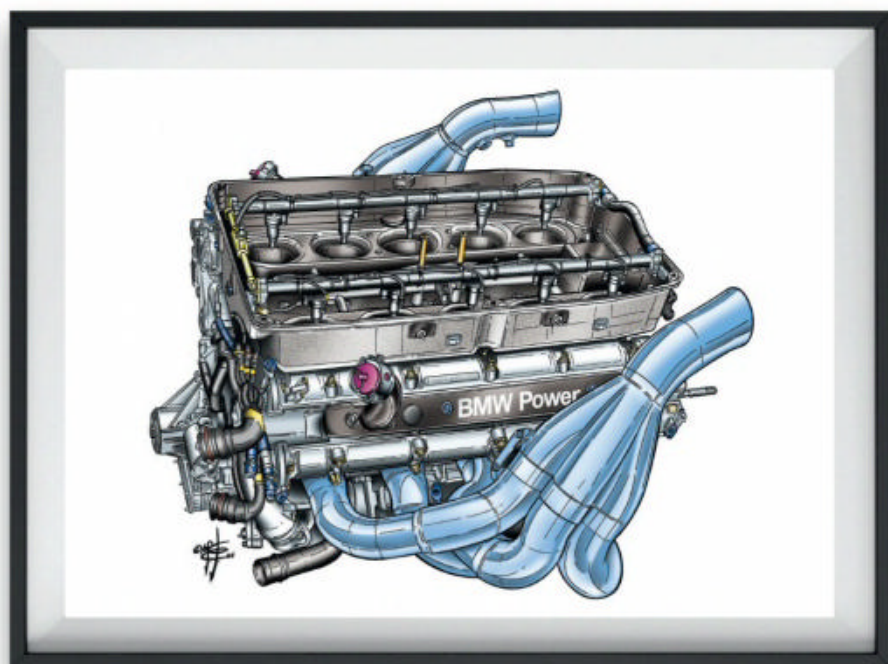
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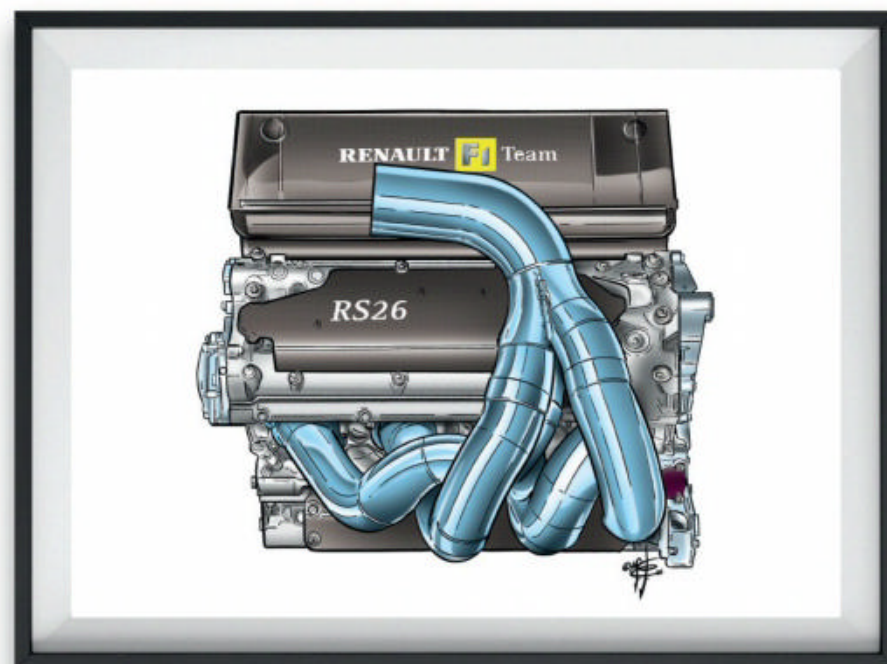
**NIGEL ROEBUCK: F1'S FASTEST FINN**



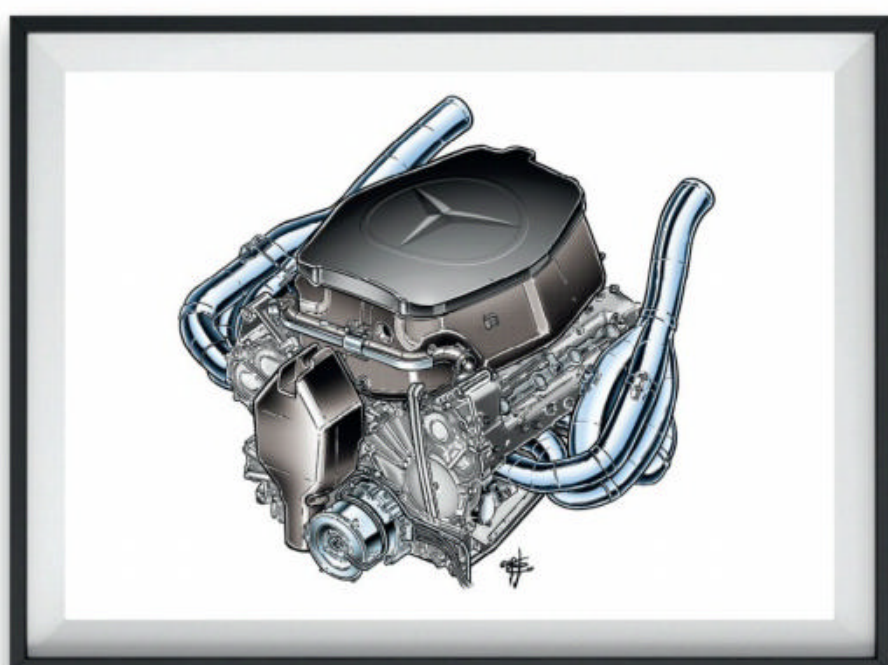




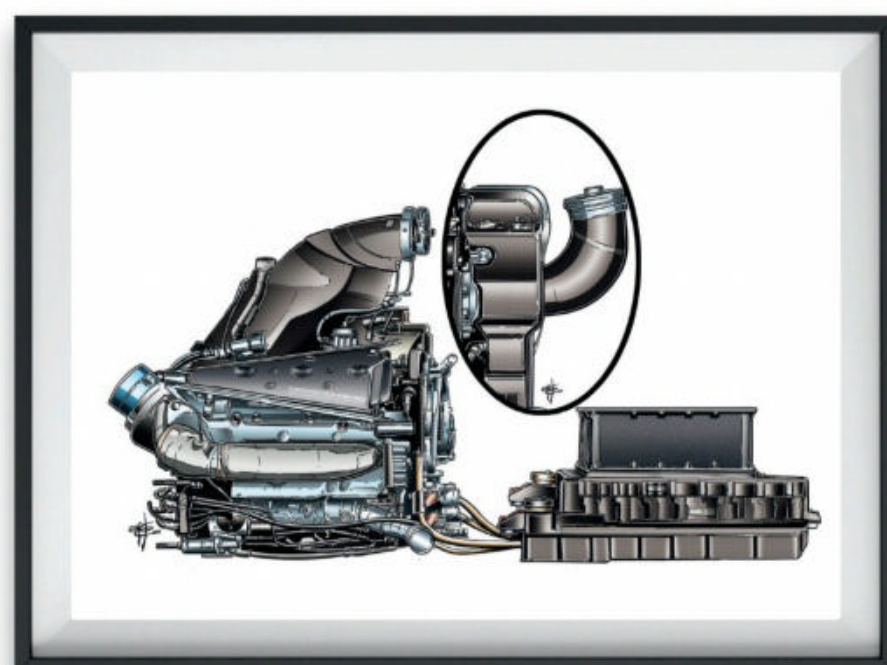
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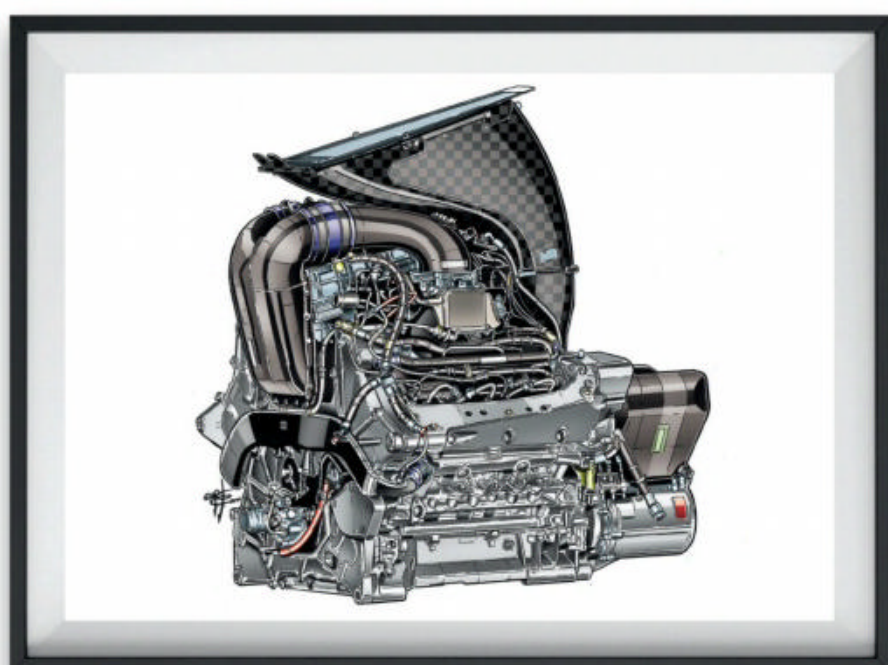
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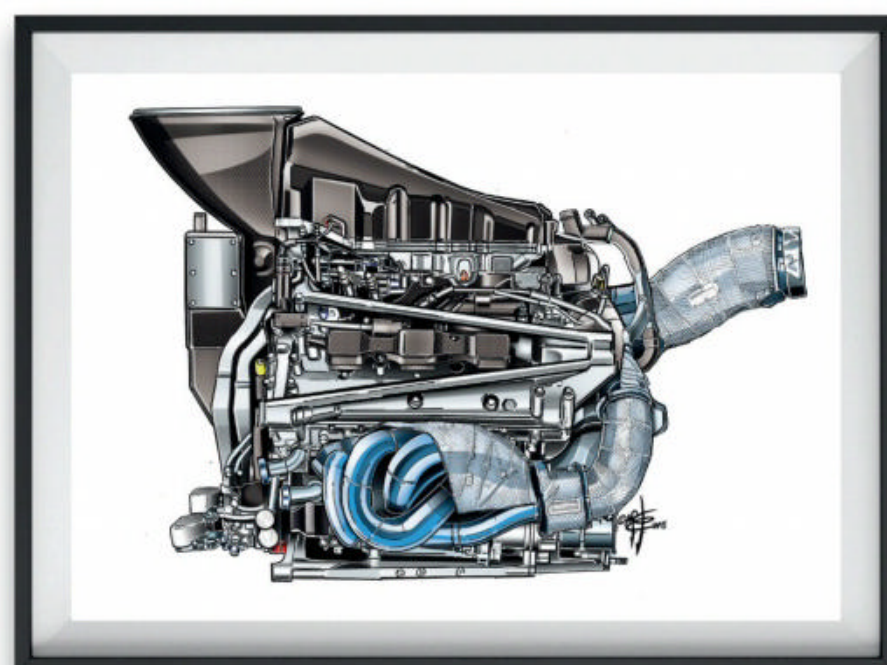
**MERCEDES 108W 2.4 L V8 2009**



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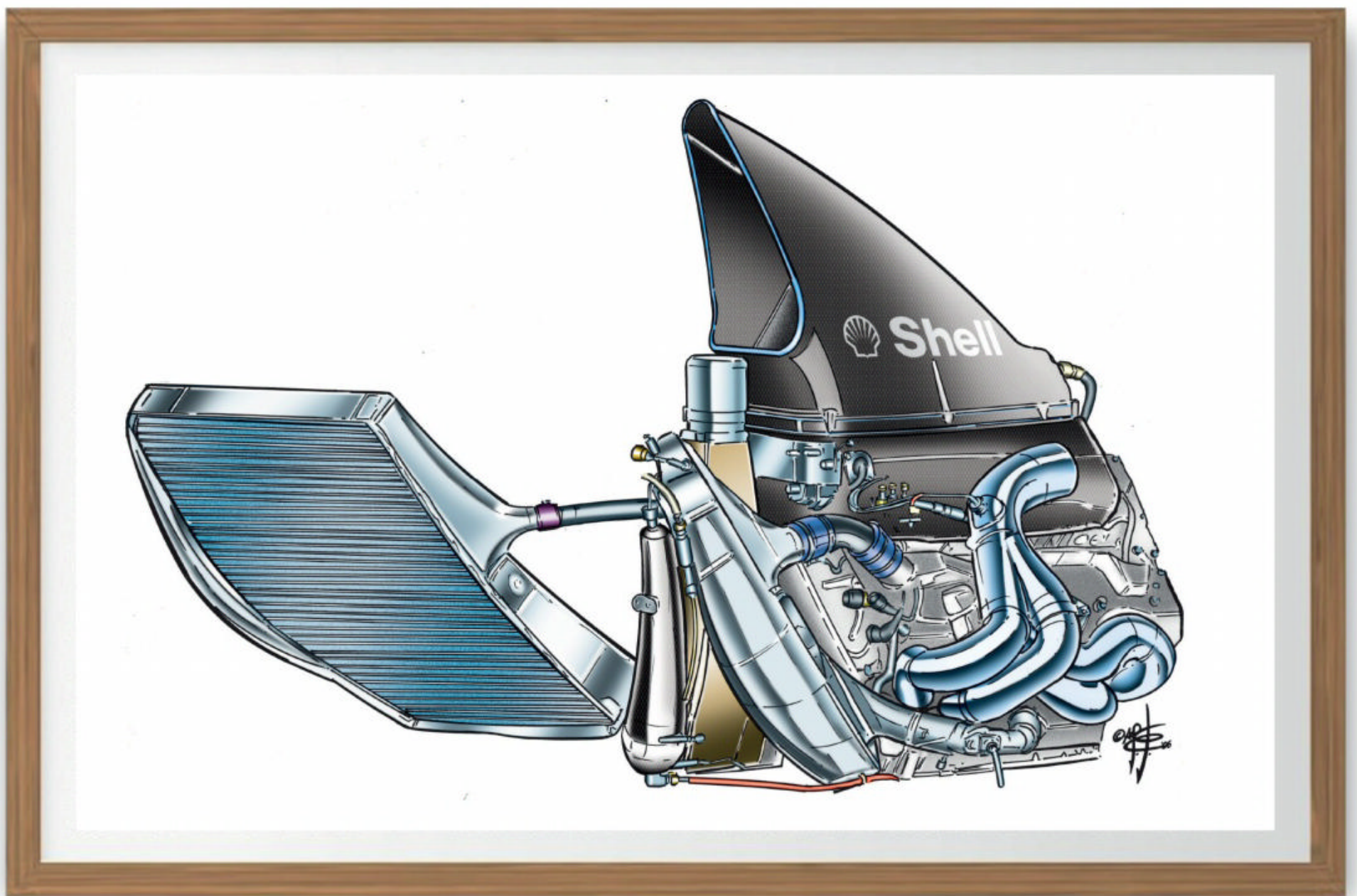


**FERRARI 059/3 1.6 L V6 2014**



**HONDA RA615H 1.6 L V6 2015**





FERRARI 056 2.4 L V8 2006

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# RICHARD MILLE

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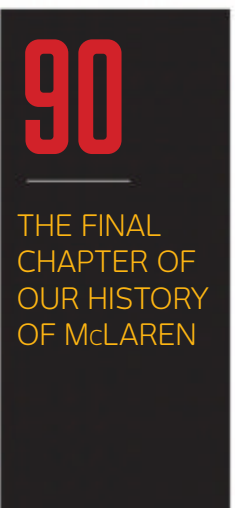
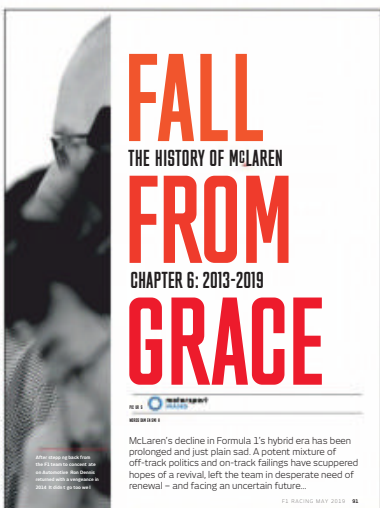
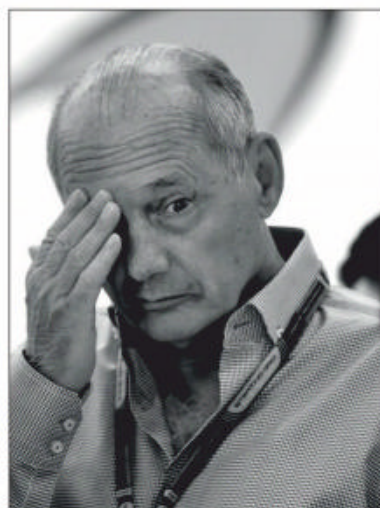
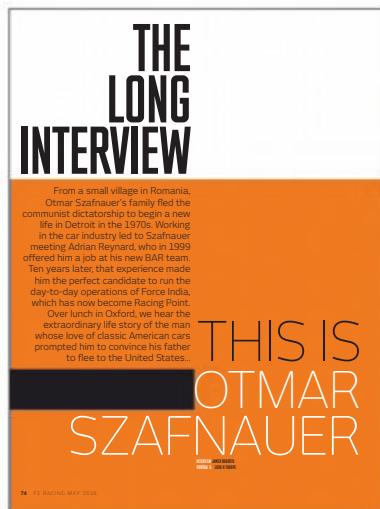
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Ben Anderson

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## Contributors



**ANDREW BENSON**  
BBC Sport's Andrew Benson investigates recent staff changes aimed at returning McLaren back to their glory days. See p50



**ANTHONY PEACOCK**  
Having stayed on in Bahrain after the GP for testing, Peacock was on-hand to watch Mick Schumacher make his Ferrari debut (page 64)



**ALISTER THORPE**  
A visit to Oxford's Cherwell Boat House was the venue for this month's Long Interview with Racing Point's Otmar Szafnauer (p74)



**NIGEL ROEBUCK**  
This month, the veteran Formula 1 journalist remembers McLaren's 'Flying Finn' Mika Häkkinen on page 88

## Is it time for more DRS zones, not less?

**I'm going to say** something unpopular here: I'm increasingly beginning to think DRS, decried by many – including reigning world champion Lewis Hamilton – as a gimmicky sticking plaster for F1's overtaking ills, may actually be a *good* thing.

The 2019 Bahrain Grand Prix is my case in point. Taking a more liberal approach to its use, by deploying a third zone between the Turn 1/2/3 complex and Turn 4, helped create conditions for several contested overtaking moves throughout that race, including the one that proved decisive in Hamilton's inherited victory. True, it didn't make a huge difference in Melbourne – never a good track for overtaking anyway – but Romain Grosjean made use of the added opportunity to pass Antonio Giovinazzi's Alfa, so that's something.

China, with two zones, was a turgid affair, which leads me to wonder whether a third, between Turns 3 and 6, or the short straight between 10 and 11, would have spiced things up. Certainly, on the evidence of Bahrain (an admittedly small sample set), an extra DRS zone combined with bigger and draggier rear wings seemed to create more useful slipstreaming.

Formula 1 is forever trying to be all things to all people. Making the cars faster and more extreme will inevitably lead to more downforce, which we know hurts racing, but DRS mitigates the effect, allowing F1 to have fast cars *and* overtaking.

Following seems easier with the simpler front wings too – Kimi Räikkönen seems to think so – and as long as braking zones remain contested, which is the absolute key to making the overtaking exciting, there is no reason why DRS cannot contribute positively.

F1 has been bold in bringing a taste of its 2021 revolution forward with 2019's revised aerodynamics. That boldness should extend to greater use of DRS at other circuits. It might be unpopular, but Bahrain showed how well it can work if used correctly. I think it might be time to reappraise the worth of this particular gimmick.

Speaking of reappraisals, McLaren is undergoing a painstaking process of renewal after a terrible run of form in F1's V6 era. After a difficult end to 2018, this season has started better for the beleaguered British team. But, crucially, McLaren is being extra careful not to get carried away. There is a refreshing air of humility about the team now and, as Andrew Benson explains in this month's cover story (page 50), McLaren has properly hit the reset button after years of over-promise and under-delivery.

You will notice a slightly different balance to *F1 Racing* this month. We've expanded our regular Pro section with the aim of taking you deeper inside the world of F1, revealing some of the secrets behind how the professionals do their thing at the pinnacle of motor racing. We hope you like what you see.

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## Sparks fly for Sainz's McLaren

Carlos Sainz's McLaren switch hasn't got off to the best of starts this year. He suffered an engine problem in Australia and then 'a brush' with Max Verstappen in Bahrain incurred a puncture that forced him to pit.

It was an unfortunate incident when the Spaniard was challenging for fifth at Turn 4 on lap 3. He attempted to overtake Max Verstappen around the outside of the corner, but slight contact between the pair scuppered Sainz's race.

I captured this shot while I was positioned on the roof of the control tower that is used for the drag racing strip situated between Turns 10 and 11.



### Photographer

Glenn Dunbar

**Where** Sakhir, Bahrain

**When** 6.19pm, Sunday  
31 March 2019

**Details** Canon EOS-1DX MkII,  
400mm lens, 1/800th @ F4.5















## Reaching new heights in Bahrain

Lewis Hamilton's 74th grand prix victory in Bahrain was probably one of the most fortuitous of his career, after he took the lead from Charles Leclerc's stricken Ferrari.

Big thanks to Lewis for looking up and smiling when I called down to him just after he collected his winner's trophy.

When we first came to Bahrain it wasn't possible to get into a position above the rostrum, but the organisers here are always asking us for ways they can improve.

I suggested they should make a ladder from race control to the top of the pit building to get this shot and sure enough 'Steven's Ladder' was in place the following year.



**Photographer**  
Steven Tee

**Where** Sakhir, Bahrain

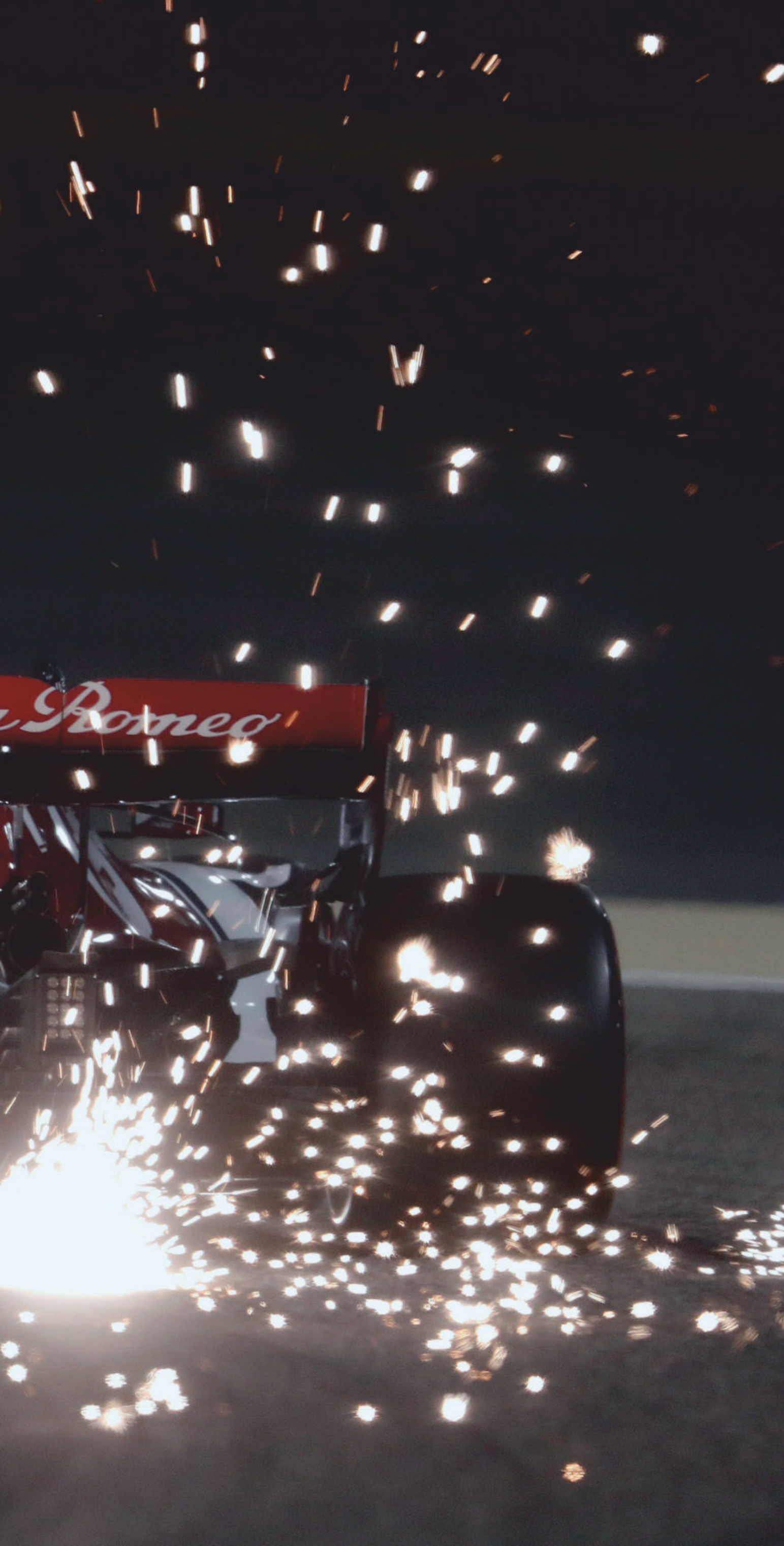
**When** 8.02pm, Sunday  
31 March 2019

**Details** Canon EOS-1DX MkII,  
200mm lens, 1/640th @ F4.0









## Räikkönen's Alfa in bumpy night ride

While Bahrain is a night race, track time under the floodlights is actually quite limited compared with similar races in Singapore and Abu Dhabi. Two practice sessions are held in sunlight, but qualifying and the race are obviously after sunset.

During qualifying I ventured to Turn 10 and despite the cars running on low fuel, Kimi Räikkönen's Alfa Romeo appeared and hit a bump; his titanium skid plate sent a bright shower of sparks into the air.

The great thing about F1 cars running in the dark is how bright and exhilarating the sparks look as they fly up from under the diffuser, giving a great feeling of speed.



**Photographer**  
Steven Tee

**Where** Sakhir, Bahrain  
**When** 6.39pm, Saturday  
30 March 2019

**Details** Canon EOS-1DX MkII,  
600mm lens, 1/500th @ F6.3







## Stunning Leclerc left heartbroken

It was almost a fairytale weekend for Charles Leclerc, in only his second grand prix for Ferrari. After spending most of the Bahrain Grand Prix in the lead, a faulty cylinder in his V6 caused him to relinquish the lead to Lewis Hamilton.

A late-race Safety Car ensured he held on to record his first ever podium in F1, but Charles couldn't hide his disappointment over losing a victory that was surely his.

I was waiting in parc fermé at the end of the race for the three drivers to emerge from their cars. In this instant, Charles raises his eyes to the heavens as if to ask, 'why me?'

Yet what was so impressive was his demeanour and calm response to the troubles he suffered. His time will come.



### Photographer

Andy Hone

**Where** Sakhir, Bahrain

**When** 7.54pm, Sunday  
31 March 2019

**Details** Canon EOS-1DX MkII,  
200mm lens, 1/400th @ F2.8



## The wheel within wheels of fortune

On Friday evening in Bahrain I went to Turn 11, a corner I always shoot at, and this year the organisers had erected a large Ferris wheel in one of the fan zones near it.

Before this session I borrowed a new 400mm lens from the photographic team at Canon which provided the perfect focal length for this shot. I slowed my shutter speed down to a 15th of a second to give a sensation of speed without distorting the wheel too much.

The result was one of my favourite images of the weekend. I love how the blue and silver of Daniil Kvyat's Toro Rosso matches the hue of the Ferris wheel.



### Photographer

Glenn Dunbar

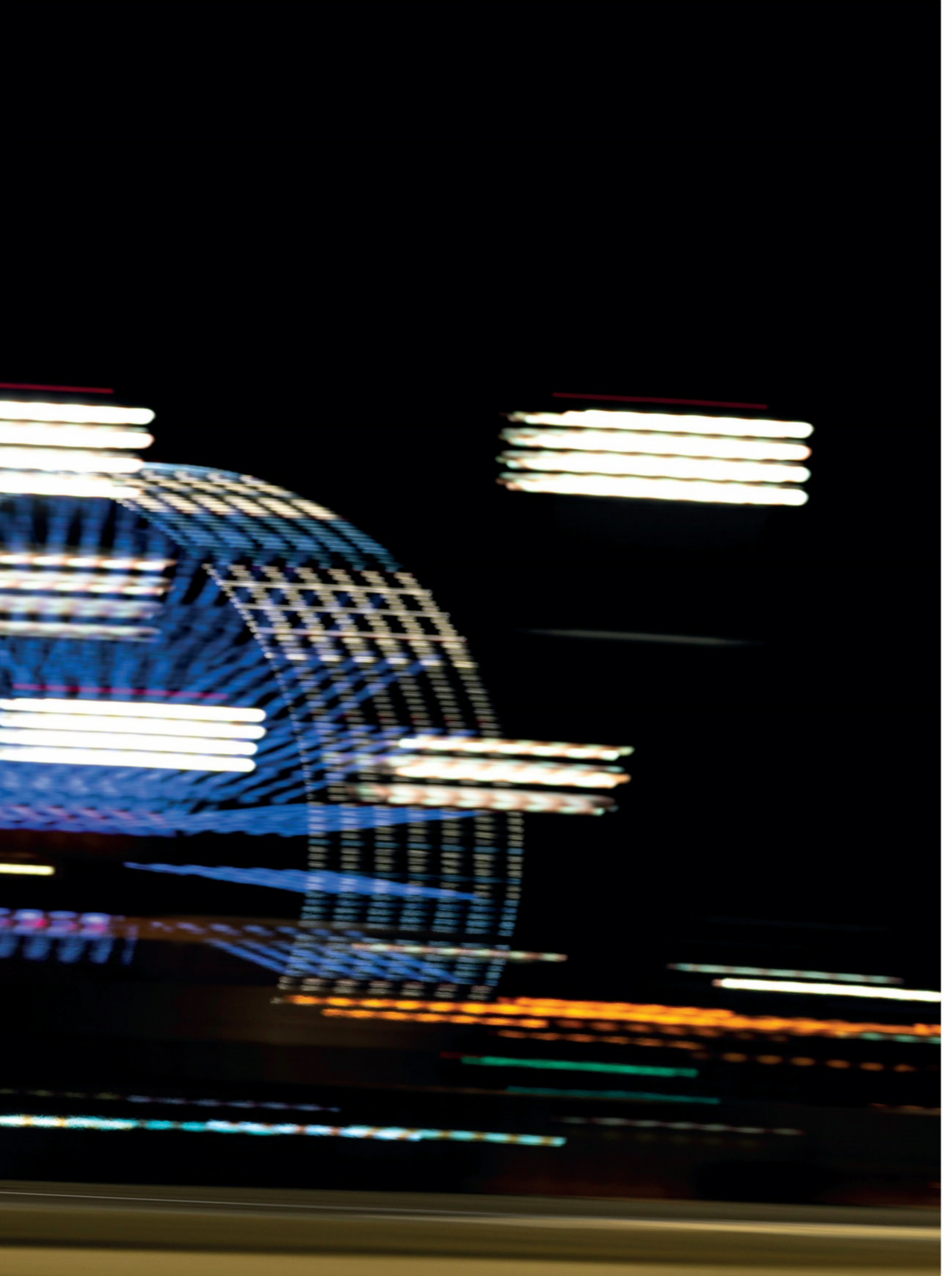
**Where** Sakhir, Bahrain

**When** 7.09pm, Friday  
 29 March 2019

**Details** Canon EOS-1DX MkII,  
 400mm lens, 1/15th @ F5.6











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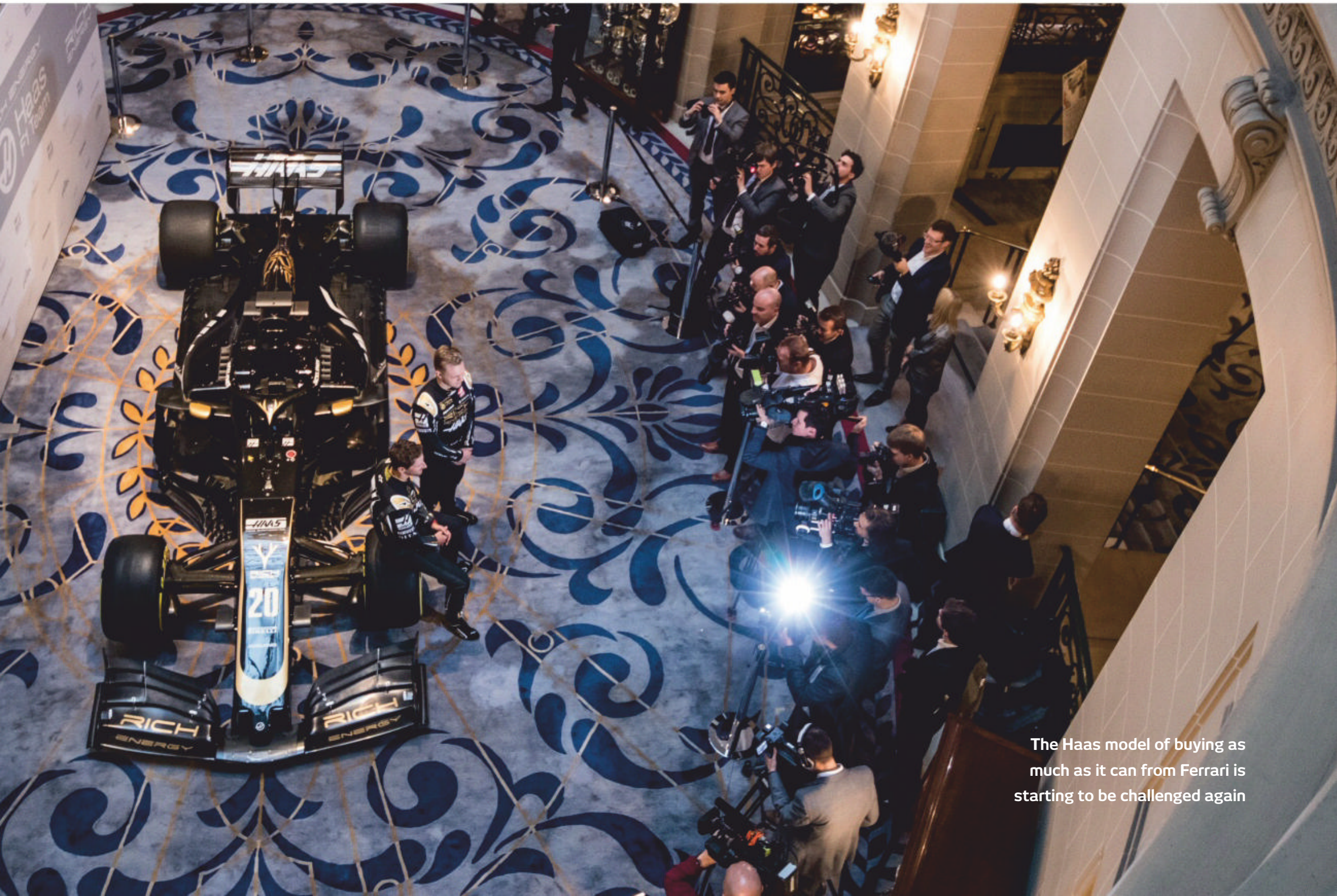


## HAAS MODEL: THE HEAT IS ON

**01** When word leaked out in the F1 paddock that a small change to the rules had been agreed for 2020, forcing teams to make their own brake ducts, it was viewed by many as a small matter of detail and therefore inconsequential. But in the world of F1, nothing ever changes without good reason.

The reality is it marked an important line in the sand over the future direction of Formula 1, with the Haas 'customer model' team in one corner and bigger teams like McLaren, Renault and Williams – all of which consider themselves to be properly independent constructors and thus closer to the real spirit of F1 – in the other.

Haas' approach of buying as much of its car as it can from Ferrari has always caused unease among its closest competition. And the quicker Haas has got, the more its rivals have spoken out about why they believe the team's



The Haas model of buying as much as it can from Ferrari is starting to be challenged again





approach is not good for the future of F1. On top of the direct concerns about Haas, there has also been plenty of talk about close manufacturer alliances with B-teams potentially helping the top outfits pull further away from the pack too.

To clamp down on what Haas has been doing, there has been a growing impetus from some teams for the FIA to become much stricter on F1's 'listed parts' rules. These items in effect define what teams must design and develop themselves. Everything else can be purchased from elsewhere. Presently, F1's listed parts are limited to the survival cell, the front impact structure, the roll structures and bodywork - with the exception of air boxes, engine exhausts and any prescribed bodywork geometries.

There was a push to expand this list massively for 2019, forcing teams like Haas to build much more of its own car, but Liberty Media pushed back, fearing that avenue would risk driving Haas out of business, thus making Formula 1 potentially less attractive for other potential new outfits.

That is why, for example, an idea to force teams to make their own suspension – an item many constructors share – has also now been abandoned. But the brake duct change, supported by a majority of teams, has gone through for 2020 – and it is something that affects Haas alone, as it is the only outfit that buys ducts from another team.

Brake ducts appear insignificant in isolation, but the fact they are now used to cleverly manage airflow – and especially to direct it to the correct area of the floor to feed the diffuser – means they are an important contributor to overall performance. Haas team principal Guenther Steiner is resigned to the war over brake ducts being lost, and thus needing to find extra resource for next year's car.

"We just have to spend more money," he said after the news emerged. "You need more people to do it. It is a job that we could easily do without, doing the brake ducts, but now we have to do them. We have overcome bigger hurdles. I am not going to lose any sleep over it."

Steiner is well aware that arch rival Renault was the driving force behind the brake duct rules push, so has a few choice words for this renewed attack on his team's business model. "Will they ever win with their business model? That is the question," said Steiner of Renault. "What is the difference between us not winning and them not winning? I think that [business model] is not their problem. Not winning is not their problem. Their problem is us being better than them and they use the 'we cannot win' as an excuse. Can they win? It doesn't look like it."

Steiner knows the issues ultimately go beyond his team and is encouraged that Liberty in particular seems eager to protect the smaller outfits and promote alternative ways of doing things. That much was made clear in an interview that F1 motorsport director Ross Brawn gave to Sky recently about the future of F1.

"The Haas model is interesting and it has been very



“THEIR PROBLEM IS US BEING BETTER THAN THEM AND THEY USE THE ‘WE CANNOT WIN’ AS AN EXCUSE. CAN THEY WIN? IT DOESN’T LOOK LIKE IT”

GUENTHER STEINER REACTS TO RENAULT-INSPIRED RULE CHANGE

successful,” explained Brawn. “It’s something we have to maintain for the future, for a small team to come in and be pretty respectable. There’s some trimming we need to do about what they’ve been able to do but all credit to them, they took a model that was there which nobody had exploited as much as they did, and it’s a great story.”

Steiner says the backing of Liberty is important, but thinks F1's owners are thinking more about the long-term viability of the sport than just the American-owned outfit.

"I wouldn't say they are looking after us," Steiner added. "I would rephrase it that they are looking after Formula 1. It is a bigger picture than us or another team. We are all egotistic, obviously, and somebody is a referee, and they need to look after the business [so] that we have enough teams here that can fight at an equal level."

"If you have three teams that are two seconds ahead, then you have teams two or three seconds behind, and another group two or three seconds behind them, what fun is that? How long can that exist? We need to close the gap and that [non-listed parts] is one of the ways to do it. If people like it or not, they just need to do a better job."

## F1 UNSURE OVER 'Q4' FORMAT



PICTURES: SAM BLOXHAM; STEVEN TEE; ANDY HONE; SHUTTERSTOCK

Plans to introduce an extra qualifying session are on the agenda

Formula 1 teams have been rattling through computer simulations of a new four-session qualifying format, to see whether it will spice things up for 2020, or whether a lack of tyres will prevent it from working at all.

As part of F1 owner Liberty Media's push to improve the spectacle, it has been eager to shake up the qualifying format – even though the current Q3 format is almost ►



## “WE’RE OPEN TO ANY IDEAS BUT YOU HAVE TO REALLY DO YOUR HOMEWORK TO MAKE SURE WE DON’T JUST CHANGE FOR THE SAKE OF CHANGE”

CHRISTIAN HORNER

universally liked. With more track action and shorter breaks between qualifying segments being something that fan feedback suggests would increase popularity, Liberty has pushed the idea for quite a while.

The four-session idea came up as a serious proposition at the end of last year, with the late Charlie Whiting explaining at the time why the idea was believed to have some merit. “They’ve been doing a lot of research among fans, and they feel this is one of the things that the fans would like. Slightly shorter [sessions], slightly shorter time between them, four go out in Q1, four, four, leaving eight. I think it’s quite a nice idea.”

It was originally planned to come into force for 2019, but was dropped when it failed to gain unanimous support among teams. One of the reasons it didn’t go through is some smaller outfits were concerned they would be disadvantaged under the proposed system. They feared the top outfits would be able to cruise through the early segments with one run to save tyres, while slower teams would need multiple runs that would then put them at a much bigger disadvantage later on.

Despite the opposition at the time, the Q4 idea came up again at a meeting of the Strategy Group and F1 Commission ahead of the Bahrain Grand Prix – with Liberty making it clear it hopes to bring in the change for 2020. But with those earlier fears having not yet been banished, it was agreed the best way forward was for teams to run through some mock Q4 simulations to work out the probable impact. That way, teams would better understand just how things would pan out – both from a tyre usage perspective, and working out

a preference for starting the race on tyres used in the final segment of qualifying rather than the penultimate one, as is the case under the current rules.

With Pirelli understood to be reluctant to provide extra sets of tyres free of charge, if the simulations show an extra session will not work the idea may need to be dropped. There



**A tweak to qualifying is unlikely to disrupt the order at the front**

are widespread fears of tyre shortages making a farce of the spectacle, with cars sitting out large parts of qualifying to save rubber. The current advantage enjoyed by the top three teams means the two extra cars that would progress to Q4 under the proposed format would also have little incentive to run.

Red Bull boss Christian Horner said early indications from the simulations were not positive. “What you don’t want to end up with is cars not running in Q4 because there are no tyres left,” he said. “Are there enough tyres to support the initiative? We’re open to any ideas but you have to really do your homework to make sure we don’t just change for the sake of change.” ▶

## F1 DIGEST THE MONTH’S BIG STORIES AT A GLANCE

**21.03.19** Formula 1 announces new Middle East and North Africa TV broadcast deal

**22.03.19** Pirelli confirms testing plans for new generation of 18-inch wheels



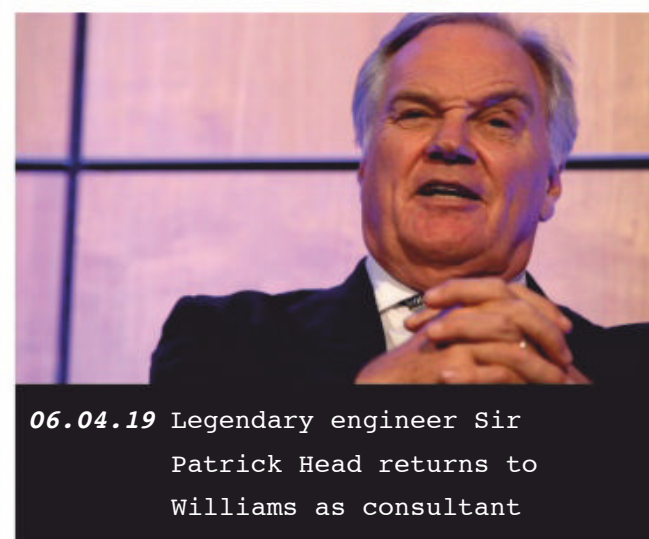
**28.03.19** New McLaren technical director James Key begins work

**29.03.19** Sauber extends junior project by launching karting team

**30.03.19** Second row of start lights added to GP grids after visibility problems

**02.04.19** Mick Schumacher and Fernando Alonso drive in post-race Bahrain test

**05.04.19** Williams reveals increased revenue in latest accounts



**06.04.19** Legendary engineer Sir Patrick Head returns to Williams as consultant

**09.04.19** Alain Prost says F1 needs more ingenuity, less technology

PICTURES: JERRY ANDRE; GLENN DUNBAR



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## 2021 RULES MAY BE DELAYED

**03** Formula 1 owners **Liberty Media** and the FIA remain clear in their target to get the sport's 2021 rules overhaul finalised by June – even if publication of the regulations is delayed until the end of the year.

**Liberty Media has set out its vision for 2021 and the teams have until June to agree terms**

Following the latest meetings between the sport's chiefs and team bosses, the real impact of the 2021 changes to commercial rights income, governance and a cost cap are now being pored over. There is a lot of ground to cover if sign-off is to come in time for the summer.

As Ferrari team principal Mattia Binotto said: "There are many points we need to still discuss: governance, revenues, financial regulations, technical regulations, standardisation. The list is pretty long. But it's not because the list is long that the compromises are so distant as well. I'm positive on the level of discussion and collaboration we've got."

The time pressure is there, though. Under the FIA's own Sporting Code, the scale of the changes planned for 2021 means matters must be sorted in a timescale of weeks. Article 18.2.2 states

that if there is a 'substantial impact on the technical design of the Automobile and/or the balance of performance between the Automobiles' then rules can only come into force on the second year after the 30 June deadline, which could delay the overhaul until 2022.

Teams are pushing to prevent a lengthy delay by splitting consideration of the commercial and governance issues from the technical rules – delaying publication of the regs until December to prevent bigger teams gaining extra advantage by throwing early extra resource at them.

At the end of 2018, F1 managing director of motorsport Ross Brawn said the issue of bigger teams having an advantage by early sight of rules was a concern. "We don't want teams with a lot of resource to gain a march on those who don't," he said. "But it's a difficult balance because there is a perfectly valid argument that the later you leave the issuing of the information, the more it suits the teams with a lot of resource. The teams will have about a year to work on the designs of these cars. That's the right sort of timescale. Once they've designed their 2020 cars, they need to be able to focus on 2021."

Delaying requires unanimous support. Some smaller teams share the concern that delaying publication will help bigger outfits, while lawyers have been asked to check that a delay wouldn't breach the Sporting Code.

**“WE DON'T WANT TEAMS WITH A LOT OF RESOURCE TO GAIN A MARCH ON THOSE WHO DON'T, BUT THE LATER YOU LEAVE IT THE MORE IT SUITS THE TEAMS WITH A LOT OF RESOURCE”**

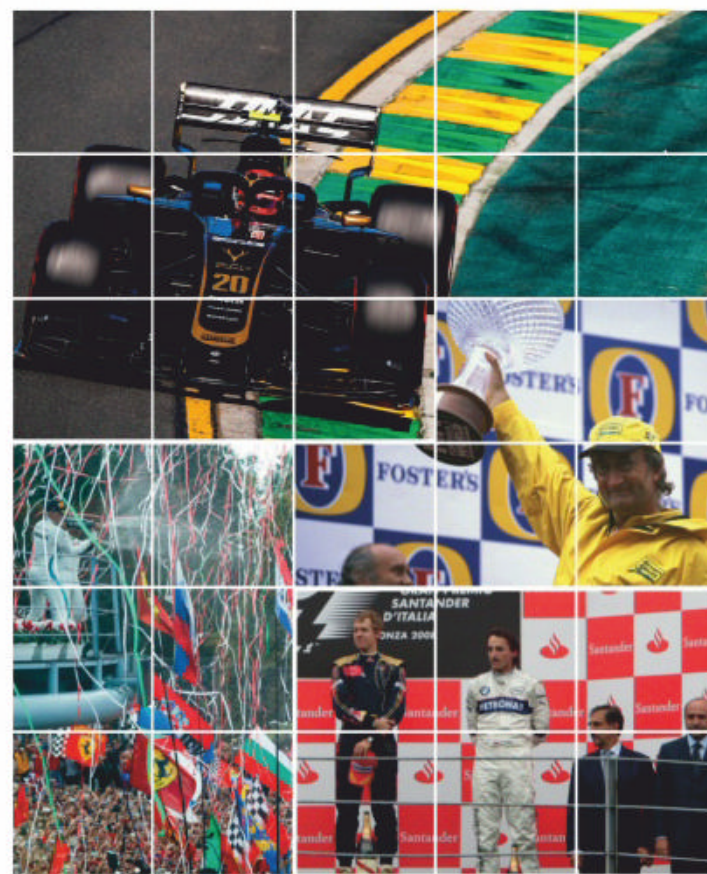
ROSS BRAWN



## F1 MASTERMIND

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- Q1** Zeltweg, Sebring, Riverside, Pescara, Monsanto, Avus, Le Mans, Donington, Ain Diab and Dallas all have one thing in common. What is it?
- Q2** Who has started more Formula 1 races: Pierre Gasly or Lance Stroll?
- Q3** What links Damon Hill, Heinz-Harald Frentzen and Giancarlo Fisichella?
- Q4** Kevin Magnussen currently has one fastest lap to his name. Where did he achieve the feat?
- Q5** Where did Valtteri Bottas achieve his first, and currently only, hat-trick of pole/win/fastest lap?
- Q6** How many world championship F1 races have been held at Imola: 26, 27 or 28?
- Q7** Mark Webber won for the first time at the 2009 German GP. How many races happened before the next first time GP winner, and who was it?
- Q8** Which was the only year that Bahrain used a longer track configuration for the GP?
- Q9** True or false: Niki Lauda is the only driver to have won the South African GP three times?
- Q10** Sebastian Vettel and Robert Kubica are two of the drivers who made up the youngest ever F1 podium at the 2008 Italian GP. Who was the third?



**1** They all hosted just a single GP **2** Stroll (43 to 28) **3** They all won races with Jordan **4** Singapore 2018 **5** Abu Dhabi 2017 **6** 27 **7** 48, Nico Rosberg (China 2012) **8** 2010 **9** True **10** Heikki Kovalainen (average age 23y 11m 16d)





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# THE F1 ANALYST

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of the year was strong and the second weaker relative to Hamilton – so much so that Bottas reckoned 2018 was the worst of his career. Clearly, being cast as number two, even if by his own performance level, got to him. In '17, it was ahead of the Belgian Grand Prix that Bottas was told about the need to support Hamilton ahead of his slump in form, while last year he tailed off alarmingly – in race conditions in particular – after being forced to cede position to Hamilton having dominated the Russian GP weekend.

That Sochi race was a particular blow. Team boss Toto Wolff suggested to Bottas before the race he was clear to win, only for the circumstances to, justifiably, force Mercedes to switch the drivers round. The justification was simple: Hamilton was the championship leader, Bottas had fallen out of contention. Bottas is determined this year to stay in the hunt, which will prevent this happening again. It's impressive he's started this way given his morale was on the floor at the end of 2018, and it shows tremendous mental strength that he's

been able to pick himself up. In elite sport, it really is all in the head. Many would have been crushed – and stayed crushed.

After Bottas won the Australian Grand Prix, Wolff suggested he was again becoming the driver who Toto first met back in the Finn's Formula Renault days over a decade ago. Bottas has always been a quick grand prix driver, but there have been doubts over whether he has the killer instinct that separates the great from the 'merely' very good. It's too early to say whether this mindset can last, or whether the sheer brilliance of Hamilton will put Bottas into the same position as last year, but at least Valtteri has given himself a chance of extending his stay at Mercedes.

In Australia, Bottas was as quick as Hamilton despite underachieving slightly in Q3, and while his race drive was excellent that in itself wasn't what caught the eye. Instead, we heard that edge over the radio on the slowing-down lap, with his explicit message to persons unknown. Could it have been directed at long-time former sponsor Wihuri, whose boss labelled Bottas's performance as "weak" after pulling support at the end of 2018? It's unclear, but it fits the bill. Either way, what matters is that Bottas has taken his destiny into his own hands and is not afraid of upsetting anyone.

Thinking of him now as Evil Bottas is instructive. When he joined Mercedes as a late replacement for the retired Nico Rosberg, he set about being the perfect team player. Given the friction between Hamilton and Rosberg in the preceding years, this was

## 'EVIL BOTTAS' DECIDES TO GO HIS OWN WAY

**Could it really all be in the beard?** Valtteri Bottas returned to action this season a more ruthless, selfish, focused driver, which according to the tropes of parallel-universe based science fiction suggests it's the harder, evil version of the Finn that has hit the track in 2019. Bottas is such an affable character that even 'Evil Bottas' remains at the likeable end of the scale, but could the beard be a sign that he's a more dangerous proposition as a grand prix driver than ever before?

Regarded by many as a dead man walking heading into this season, thanks to his poor end to 2018 and the lurking presence of highly-rated but dispossessed Racing Point driver Esteban Ocon in the Mercedes garage, Bottas has made a clear decision to do things his own way this year. If it is to be his last at Mercedes, he will go out on his own terms and leave no stone unturned in the quest to get the most out of himself. Only Bottas and those closest to him will really know what he's gone through over the winter, but he has started with a dramatically different mindset.

"There's many things I won't tell about what's



**Australia, and the manner in which he achieved the win, was vindication for the changes Bottas made over the winter**

changed in my mindset and why I've changed them, but one of the key things is not to be in the same situation as I was in last year, being too far behind in the points, and that's a great motivator for me to be in the fight," says Bottas of his approach. "It's completely different once you know you're fighting for the championship. There's many motivators for me this year."

The situation he was in last year was of becoming a support act to Lewis Hamilton over the second half of the season, which was itself a repeat of 2017. In both campaigns, his first half





refreshing for the team. But there's a balance to be struck between being in it for yourself and subjugating your personal ambitions for the team. This is a balance Bottas has adjusted this year.

He has also taken a leaf out of Hamilton's book. Despite the criticism, certainly baseless nowadays, of Hamilton's 'celebrity' lifestyle and how it might conflict with his focus on F1, it's clear he has struck a balance that works for him. To be an elite sportsperson requires remarkable dedication, but to avoid burning yourself out there needs to be a release. Bottas is taking control of his own time. Over the winter, he contested the Arctic Lapland Rally in a Ford Fiesta WRC and finished fifth. By all accounts, he thoroughly enjoyed that challenge and it played a part in his revitalisation.

There have long been doubts about the hardness of his edge. During his Williams days, there was scrutiny of his forcefulness on first laps. This became a contentious and sore point

**“WHAT MATTERS IS THAT BOTTAS HAS TAKEN HIS DESTINY INTO HIS OWN HANDS AND IS NOT AFRAID OF UPSETTING ANYONE”**

at Grove. Like Rosberg before him, Bottas is not perhaps the most naturally incisive driver on the grid in wheel-to-wheel combat, and he probably never will be, but if he can improve even by a small amount it will make him harder to beat.

By doing things his own way, not afraid to shout the odds in the team, this might not make him as strong a driver as Hamilton, but it could lead to him proving he should stay on. That's a seismic shift because it seemed at the end of 2018 that his only hope was to accept and embrace fully his status as number two, and focus on getting as close to Hamilton as he could rather than attempting to beat him. But this new edge means perhaps there is another way for a driver who seemed a busted flush six months ago.

It might not be enough, as Hamilton is a yardstick anyone would struggle to measure themselves against successfully. But this new mental approach, which reveals a hitherto either non-existent or shrouded mental strength, gives Bottas the best chance of making a go of this after all. As the man himself said in Bahrain, “it must be the beard”.



**New beard, new man?**  
Bottas may now have a chance at retaining his Mercedes seat for 2020





# UNDER THE HOOD

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500 degrees centigrade, and by the time the driver releases his near 300lb force on the brake pedal the temperature will have risen to around 1200 degrees, the same temperature as molten lava.

The ability of the disc to cool properly is important not because of performance but because of the life of the disc. The discs and pads are made of a material called Carbon Carbon. This apparent repetition is because the brakes start life with a carbon fibre preform that's purified over a period of about two weeks at high temperature through a process known as pyrolysis. This burns off any organic binder material in the carbon fibre layup, leaving a very pure carbon but with voids in the material. The material then undergoes

densification by exposing it to a carbon rich atmosphere again at very high temperature over a period of several weeks to form a solid and homogeneous carbon material which can be machined into the required form for the disc or pad. This finished material has a desire to revert to its previous form at high temperatures and so the main mechanism for loss of mass in a brake disc isn't mechanical wear (although this does occur at low temperatures) but oxidation, which happens with increasing ferocity above 650 degrees centigrade.

It's this unwanted oxidation which

## THE MAGIC OF BRAKING

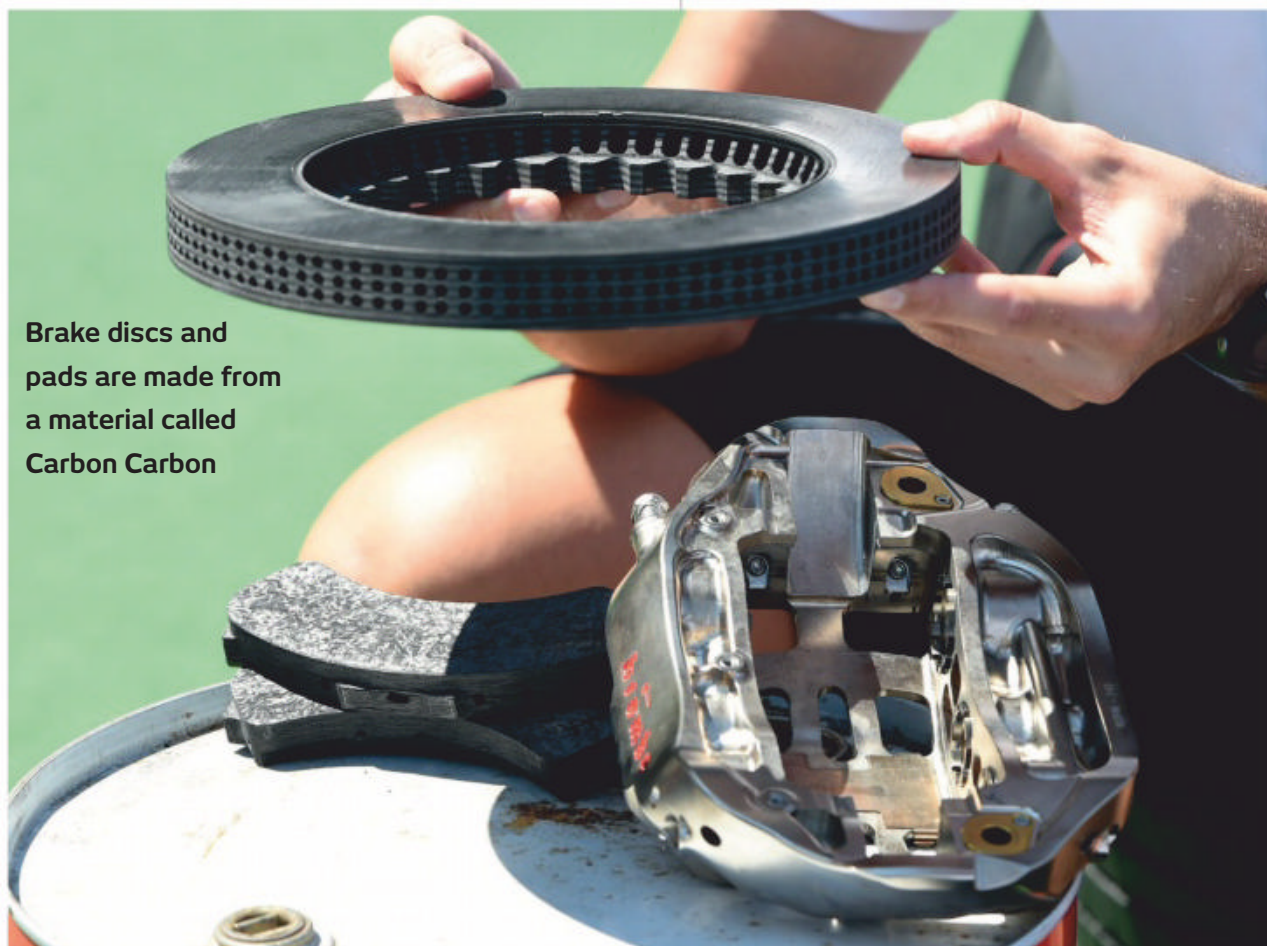
**Even a spirited driver rarely** considers their brakes when driving on the road. An emergency stop usually prompts little more than a fleeting thankfulness for the efficiency of modern braking systems, and in reality what you might consider hard braking for a roundabout uses only a small part of the potential braking performance available to you.

And while that determined late braking might have seemed daring, braking in an F1 car is something else. Not only is the deceleration phenomenal, it's done time and time again during the course of a lap. At street circuits like Monaco and Singapore the driver spends 23% of the lap mashing the brake pedal rather than the throttle. What this means, and what's often not appreciated, is that huge benefits to lap time can be found by paying as much attention to the brakes as you do to the engine and the chassis.

Consider one of the hardest stops on the F1 calendar – Turn 13 in Canada. Ten years ago the braking distance for this corner was around 117 meters but last year it was just 97 meters. Some of this is explained away by the faster apex speed of the corner, yet conversely the top speed leading

up to the corner is also now also higher. What it does mean is the energy dissipated by the brakes is immense, in this case over 2100kW. With full electrical energy deployment the power unit can produce a bit over 740kW, you can see that the brakes have over 280% of the power of the engine.

All of this immense power has to be dissipated as heat. The brake disc will have started that particular braking event at somewhere around



Brake discs and pads are made from a material called Carbon Carbon

PICTURES: MARK SUTTON. ILLUSTRATION: BENJAMIN WACHENJE



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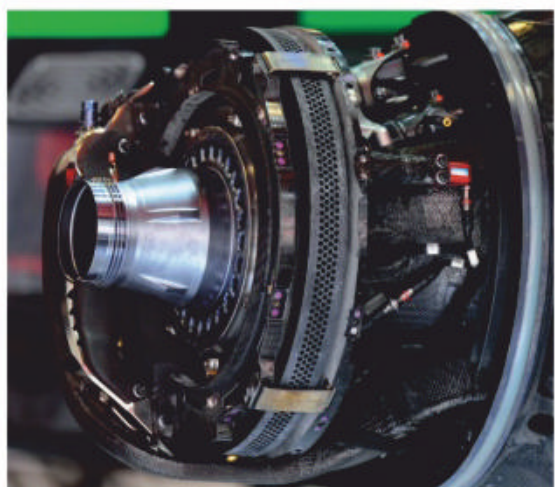


The heat caused by braking in an F1 car often causes the discs to glow

drives the need to dispel the ferocious heat, and which has driven the ever-increasing complexity in brake disc design. That disc of ten years ago probably had around 200 relatively large cooling holes. Today it would have over 1400 holes of 2.5mm diameter.

Anyone who has tried to drill a deep hole with a thin bit will know how difficult it is, and even on sophisticated machines it's not uncommon for a bit to break, thereby rendering the whole disc scrap. Machining the disc must be done carefully; it takes around 14 hours to complete a single disc. The reason for the small-diameter holes, which are around

**The number of holes in brake discs has increased to aid cooling and make the discs lighter**



## “HUGE BENEFITS TO LAP TIME CAN BE FOUND BY PAYING AS MUCH ATTENTION TO THE BRAKES AS YOU DO TO THE ENGINE AND THE CHASSIS”

130mm deep, is that they increase the surface area over which the cooling air flows and it's this which determines how well a disc dissipates heat. A nice side effect is that the holes also make the disc extremely light at just 1.2 kg. A similar-sized steel disc on a road car would weigh around 7kg.

But it's not just the carbon friction material that slows the car down. Bearing in mind that a road car in an emergency braking situation may decelerate at around 0.8g, it may surprise you to know that when the driver of an F1 car lifts off at 200mph, the aerodynamic drag of the car will decelerate it at over 0.9g. Add to this the engine braking that occurs when the throttles are closed and the engine turns into a huge air pump and the 120kW of braking power absorbed by the MGU-K as it harvests charge for the battery, and you can understand how an F1 car can decelerate at around 5g.

But what do we mean by 'g'? Strictly we should

express deceleration in 'meters per second squared' – in other words the change of speed over a given time. But on our planet the force of gravity will accelerate anything you drop, be it a feather or a heavy weight, at an acceleration of 9.81 meters per second squared towards the ground. This then becomes a handy unit to express acceleration. At 1'g' your body weighs just what the bathroom scales tell you. At 5g your average 75kg person would appear to weigh 375kg, and this is the sort of force that a driver experiences pushing against his seat belts in an F1 car many times a lap as he brakes. To put that in context, a fighter pilot ejecting from a stricken aircraft is subjected to between 9 and 12g in a once-in-a-lifetime experience.

The performance of F1 brakes is phenomenal and, like every engineered part of an F1 car, it's continuously developing to find the smallest incremental performance gain that makes the difference between winning and losing.



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# STRAIGHT TALK

MARK GALLAGHER

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years about cryptocurrencies, starting with Bitcoin in 2008. Digital currencies which eliminate Mr Banker. Instant transactions, secure, tradable and 'distributed', which means decentralised. The power lies with the user, not a central authority.

Two such currencies have arrived in Formula 1 this year and their PR emphasises the sport's suitability based on speed, data and high performance. Soccer Coin announced that Haas driver Romain Grosjean – a former Geneva banker – would become a brand ambassador, while Futurocoin partnered with Red Bull.

Soccer Coin describes itself as a 'revolution in the sports business'. It is focused on enabling soccer fans to transact by using their favourite club's own currency held in a mobile app. This includes buying tickets and making purchases while inside the stadiums. Leave mid-match and you can sell your ticket to another fan.

A micropayment on each transaction goes directly to the club or, intriguingly, to an appointed charity or environmental project.

Founded in Malta but run from Salzburg by CEO Andreas Heidl, Soccer Coin's aim is to blaze a trail for cryptocurrencies in the world of sport, generating revenue for teams, rights holders and promoters alike.

Futurocoin's proposition is that of a cryptocurrency, named FTO, which can be used to make any kind of purchase while offering a faster transaction speed than the ubiquitous Bitcoin. It was founded by Polish businessman Roman Ziemian and his German partner Stephan Morgenstern, who met through working on Blockchain technology – the system by which a series of financial or data transactions can be made in a secure, transparent and unalterable way. Ziemian admits to being a big F1 fan, although the business reasoning behind the deal with Red Bull falls to Futurocoin's CEO Paulina Wozniak.

"Our goal is to build brand awareness of our cryptocurrency," she says, "build Futurocoin as a socially responsible brand and stop the perception of cryptocurrencies as being unavailable or obscure."

This latter point is key because, for many, the media coverage of cryptocurrencies has often majored on concerns over fluctuating values, lack of regulation, tax evasion, use on the dark web, and fraud.

By using the platform of F1, Soccer Coin and Futurocoin represent something rather important: an ambitious push to educate people about the genuine benefits of digital currencies and potentially open the door to new revenue streams.

Ferrari Coin, anyone?

## TALES FROM THE CRYPTO

**They used to say cash is king**, but that's definitely not the case any more.

It also used to lubricate many a motor racing transaction and, when I say cash, I literally mean big piles of it. Often in suitcases, sometimes in the proverbial brown envelope. I once had a driver, whose father owned an amusement arcade, bring me a sponsorship payment in £1 coins, which took two mechanics just to lift the boxes.

That's the problem, however, because in

days gone by cash became synonymous with undeclared income, which means tax evasion. This is one reason why governments and central banks promote the convenience, and scrutiny, of digital transactions.

While most of us are familiar with contactless payment cards, when it comes to moving chunks of money around the world things are more arcane. Central banks make a lot of money from exchange rates, transaction fees and commissions, and take their time over it.

That's why there has been a big buzz in recent

**Bitcoin was the original digital currency but Soccer Coin and Futurocoin have both appeared in Formula 1 this year**





## THIS MONTH

### Arif Rahimov

Promoter for the Baku City Circuit in Azerbaijan

Work to begin the construction of the Baku City Circuit starts four months before the race weekend, while the whole thing – from pits and paddock to concrete barriers – takes a month to dismantle. And the logistical challenge doesn't end there. We spoke to Arif Rahimov, the man responsible for the promotion and running of the Azerbaijan Grand Prix

## CV

2015 – 19

Executive Director  
Baku City Circuit  
Operations Company

2011 – 2012

MSc graduate in  
Energy, Trade  
and Finance  
Cass Business  
School, London

2009 – 2011

Finance Manager  
State Oil Company  
of Azerbaijan

**F1 Racing:** What are the challenges you face in creating a circuit on the streets of Baku?

**Arif Rahimov:** The amount of time we have to prepare everything is a challenge, particularly when it comes to reducing disruption to the city. There are certain compromises we make that a permanent facility doesn't need to worry about, such as the position of the barriers due to the buildings in the city. The circuit complies with all the Grade I circuit regulations, but we have introduced SAFER barriers, which were new in F1. They do a better job of absorbing the energy of an F1 car than a typical metal barrier because they don't rebound a car back onto the track.

**F1R:** How long does it take to put everything in place?

**AR:** We typically start building between four and five months before the start of the race weekend and then to dismantle – last year was a bit of a record – we managed it in 35 days. That was to remove everything: pits, support paddock, every barrier and all the grandstands. We needed to hand over the area of the city where the pits are based because a military parade was being held to celebrate the 100th year of the Azerbaijan Republic.

**F1R:** How difficult has it been to generate interest in the race?

**AR:** From the local perspective it's both very hard and easy at the same time. It's easy because we are a small country with ten million people. Whenever we have a large international event, it's easy to create awareness. But at the same time, it's also very challenging because we had zero motorsport culture prior to our race, so it was hard to sell the event and explain F1.

Four years in and we find a much bigger interest from locals wanting to participate, whether that's as a marshal, a volunteer or a spectator. So, from a local level we have succeeded in promoting the event in the country and raising the profile. From an international perspective we did a lot of advertising initially about both the race and the country but now we find the race promotes itself. Two of the races held so

INTERVIEW  
JAMES  
ROBERTS

far ('17 & '18) were considered the best of the season, so fans know Baku is the race for drama.

**F1R:** What benefits has Azerbaijan experienced from having a grand prix?

**AR:** Since we started in 2016, we have had a massive influx of tourists into the country, and the average hotel occupancy has increased from 30% to 80%. Most of the visitors before 2016 were people on business, but now we see many more people want to visit Baku and explore Azerbaijan. I believe that a big part of that success lies with Formula 1 and that exposure has put the country on the map. In the past when people mentioned Azerbaijan there was a question mark over where it was and the culture of the country.

**F1R:** What is your long-term plan for the grand prix?

**AR:** We have a new deal to hold the race until 2023, with a slightly different arrangement from the previous deal. We recognise there are a lot of local sponsorship opportunities that are best achieved by ourselves. So, we are in the process of trying to get a group of national companies to support the event. In terms of the racing, it will be very much the same – we have no plans to switch to a night race.

**F1R:** Do you understand the frustrations that some of the race promoters have with their contracts?

**AR:** It's difficult because the Promoters' Association works to try and support and evolve the sport, but every single circuit contract with F1 is different and has been negotiated individually. For example, some circuits do deals with local broadcasters or sell a section of their Paddock Club tickets. They are complicated and not easy to standardise. The old regime was different as Bernie Ecclestone was trying to create a super exclusive, high-end event. Liberty's belief is to make the sport more accessible to people, not just from a spectator point of view but for sponsors and commercial deals too – and to be more global. One approach isn't better than the other, they are just different.







## THE NEW GENERATION OF SIM RACER

### Lando Norris

is part of the new breed of F1 driver schooled by simulator technology.

But how useful is it? Who benefits more, the driver or the F1 team? We visited him at home to find out...



PICTURES: SAM BLOXHAM





Norris pounds out the miles in the comfort of his own flat







From the outside, Lando Norris's Guildford flat looks more 'suburban normality' than 'Formula 1 driver's mansion'. But inside it's a world of simulators that look like they've been lifted from the flightdeck of a spaceship, piloted by a young man who feasts on Weetabix and salad cream on pizza.

When you walk into his flat, there is an entry foyer lined with shoes – rows of trainers organised from light to dark in colour – leading into a main room that appears almost normal; a dining table and chairs, a large TV, a fireplace and big bay windows, with taupe carpets from wall to wall.

It's not your stereotypical teen pad, even more so thanks to the part we haven't got to yet – the two massive simulators positioned just in front of the lounge door, which would be the cause of massive envy for any self-respecting motorsport fan.

Norris's set-up is made by Pro-Sim – a company run by GP2 race winner Adrian Quaife-Hobbs – but of course his rig is that little bit special. As well as the adjustable pedals that come with each unit, there are three screens, and a personalised light-up steering wheel with his own logo in the middle, looking like it belongs in a 1950s sci-fi movie.

Teenager Norris has already impressed in his early races for McLaren, perhaps in part because of the time he's spent behind the wheel of a

simulator – both at his Guildford home and the McLaren Technology Centre. He revealed that prior to his debut in Australia, he had completed over 600 laps of Albert Park in the virtual world.

Asked if he ever wakes up and feels like he's missing out by not being on the sim, Norris is blunt. "My life is pretty much this, on the sim," he says.

"It's the biggest thing I enjoy in life. Maybe I spend too much time on it. I think I'm probably one of the most active users. The seat time in there is days..."

For drivers coming through the ranks, it's essential to have sim experience. This is the result of two major factors. The first is that most championships now place restrictions on testing to keep costs down, massively increasing the importance of simulators, which go some way to making up for the limitations on seat time. Secondly, F1 teams rely on the data produced from their own sims so heavily that changes are made to the cars on F1 weekends based on suggestions from back at base.

This is known as 'race support', where test and simulator drivers – the role Norris occupied at McLaren last year – will immerse themselves in the time zone of whichever race the team is operating in and log countless laps trying

**Norris concentrates hard on his home sim (left) and in a more relaxed mode (below)**



**"IT'S THE BIGGEST THING I ENJOY IN LIFE. MAYBE I SPEND TOO MUCH TIME ON IT. I THINK I'M PROBABLY ONE OF THE MOST ACTIVE USERS. THE SEAT TIME IN THERE IS DAYS..."**

different set-ups to improve areas where the race drivers are struggling. It's a process that has become hugely important in F1. For instance, during the 2018 season Antonio Giovinazzi earned specific praise from Sebastian Vettel for his work in Maranello transforming Ferrari's set-up from Friday practice to qualifying.

If the day is not spent on the home sim, Norris will be at McLaren or Pro-Sim's headquarters in Sevenoaks, where he can compare his lap times against other professional drivers. Each driver can see where the other is quicker, allowing both to improve.

"It's good as we're able to go on track together, race against each other and push each other," Norris says. "We go with our engineers, so we can give better feedback on changing gear ratios or grip levels. It's really good how accurate we can make things."

For Norris, complete dedication to training on his rig has been fundamental in his journey to the top. He's spent most of his life using them. His brother Ollie has a company called Cool Performance, which sells simulators.

While physical workouts are obviously important to his preparation, Norris's skills have been honed by constant repetition on the sim. It's not uncommon for him to log five, six or even more hours per day, laying the groundwork for his F1 outings. Ahead of his Melbourne debut, Norris revealed he played the official F1 game, F1 2018, in the time trial mode to see how his pace compared to other drivers.

"At McLaren there are really only two or three drivers you can compare yourself to," says Norris. "Mainly Oliver Turvey, Carlos Sainz and Fernando Alonso. But there are a lot more drivers from around the world that race on F1 ▶"



2018. I'm in an online team and have a lot of team-mates and we do test sessions together to try and improve my driving – that's where you can learn a bit more about overtaking spots and things like that."

Thanks to the restrictions on real world on-track running and the high fidelity of home simulators, Norris is among

the new wave of talent to reach F1 from a simulator generation, along with Charles Leclerc, Max Verstappen and Giovinazzi.

"There is no testing in F1, so the only way to get experience of an F1-spec car is to use a simulator," says Giovinazzi, who spent last season seconded to Ferrari's example in Maranello. "You build up a relationship with your engineer and can understand what feedback is required. I don't know how many hours I spend on my simulator – but it's a lot of time."

Former F1 driver Karun Chandhok headed up the GT Academy programme in India, run by Nissan and Sony, the scheme that offered *Gran Turismo* video gamers the chance to become professional racing drivers. He is a little more sceptical about the over-reliance on simulators as a tool for drivers.

"It doesn't matter how many laps Lando Norris has done on a simulator around Albert Park, he's on the F1 grid because of his success in the junior formulae," says Chandhok. "Ultimately you still have to prove yourself in

the real world because the element of danger doesn't exist in a video game. Yes, the pool of kids playing games is larger than those karting, but you still wouldn't get an F1 team signing up a driver who has won an Esports competition."

In fact, aside from the official Esports F1 competition, McLaren has run two separate Esports programmes over the past couple of seasons, firstly under the guise of World's Fastest Gamer and this year Shadow Project. Both winners, Rudy van Buren and Igor Fraga, had competitive karting or single-seater experience behind them – and they have proved useful in McLaren's sim.

Chandhok also argues the difference in quality between a bedroom sim and a Formula 1 team's simulator is significant. It can cost up to £20,000 to laser scan a circuit to record every little bump or detail on a kerb – so significant a price that until recently Racing Point did not have all 21 circuits available on its sim.

**"YOU ARE NOT GOING TO FIND THAT MAGIC LAST COUPLE OF TENTHS OF A SECOND UNLESS YOU ARE ON-TRACK TESTING IN THE REAL WORLD"**

KARUN CHANDHOK

"I've driven three or four different F1 team simulators and they are totally different to the machines Lando might have in his front room," adds Chandhok. "As well as the detailed tracks, they have excellent tyre modelling programmes so you can feel the slip angle when you turn the wheel and the feel of oversteer in the rig as you slide.

"The home sims aren't quite

up to scratch. Where they are good, is preparing you for the first couple of runs in FP1 and getting your head around a circuit, getting you in the zone to develop consistency and repeatability, but you are not going to find that magic last couple of tenths of a second unless you are on-track testing in the real world."

Away from honing a driver's skill, the other significant asset in simulator technology is race support, where teams will diagnose real-world setup with the help of a simulator driver and then feedback suggestions to the team at the circuit. They can also be used to test new parts of the car before they are put into production.

"I believe that simulators are much more of an engineering tool than a driver training tool," adds Chandhok. "In the sims you can make a 0.25% change in weight distribution or a 0.1% shift in aero balance. By tweaking drag levels and downforce, that feedback to the real-world car is really important."

Last year, alongside his Formula 2 programme and FP1 outings for McLaren, Norris was offering race support ▶

**Lando's Guildford flat is a little unconventional for a teenager**







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## WHEN F1 CARS GO WRONG

Ex-Lola and McLaren Formula 1 engineer **Mark Williams** recounts the story of the ill-fated 1993 Lola, and explains how easy it is for grand prix teams to lose their way unexpectedly



Lola had little F1 knowledge on which to base the T9330 and compounded the error by rushing the design through





As the 2019 Williams FW42 is showing, even teams with illustrious histories and good people can make a slow car.

McLaren did the same in 2013 with the MP4-28. The MP4-27 had won the last two races of 2012 in USA and Brazil, but the team plummeted to the midfield the following season. And let's not forget the car that never raced – the MP4-18 of 2003. It took McLaren two years to climb back into a winning position with the MP4-20.

It's easy to fall off the cliff of performance, all it takes is a simple mistake. The challenge is to identify that mistake and then have everyone agree that is in fact the cause of the loss of performance. This can be the hardest part. Once you've done that you can formulate a program to dig yourself out of the hole. Ironically, the loss of performance is often created by trying too hard to make a huge jump in one go.

That was the case with the MP4-18, the design was compromised to save weight. The car wasn't stiff enough in any area to carry the loads generated on the tyres from the aerodynamics and was simply unpredictable to drive. As the driver left the circuit heading for the barrier he had had no warning of the impending spin, the car just never gave him the correct feedback.

Sometimes it's not directly a design error that makes a slow car. In the case of the 1993 Lola it was a desire to be involved in F1 but not allowing enough time to do the job properly. Eric Broadley was a smart guy. He knew the future of his company had to be in F1. Spec formula were on the horizon and that wasn't the business model he wanted. Eric was a racer who loved technology, so when Scuderia Italia approached him in '92 to design a car to replace its Dallara chassis he leapt at the chance.

Lola's involvement with Larousse had finished at the end of '90 and no one had anticipated a replacement project. We should have kept a small research group following F1 – tracking the regulation changes and their impact on the design and aerodynamics. Instead we went in cold.

It was mid-1992, I remember the first meeting Eric called to break the news. We were all excited about returning to F1 when Tony [Woods], the production director, put up his hand and said, "Eric which year are we entering this car for?". We had all assumed '94. We knew you couldn't windtunnel test and design a new car from scratch in less than six months. "1993 of course" was Eric's reply. At this point Tony read him the riot act and refused to manage the production side of the project. Not a great start to something that should have begun months earlier.





With no budget for a windtunnel model the T9330 was always going to struggle to be even remotely competitive. And so it proved







For the previous six years I'd handled Lola's F3000 cars, doing the concept, aero, design and race engineering, so I fancied stepping up to F1.

Italian race teams are special – their passion is phenomenal and Scuderia Italia was no exception. The Dallara was a fine car, and with a little winter development could easily be used to start 1993 to buy more precious windtunnel time for our own design. But that was not an option.

When the team's engineers visited us in Huntingdon, they asked how the windtunnel model was going. In Eric's brief there was no time for a windtunnel program, the car would simply get scaled-up F3000 aerodynamics. So, I assumed Eric had had a change of heart – after all we would need to start a program at some point. I took this as a green light to start a model and program, but got my knuckles wrapped because there wasn't any budget...

The rest of the car was quite straightforward. This was to be a very honest car: the geometry was F3000 and the running gear, although bespoke designed, was based on the Lola Larrousse or Lola F3000. When the finished car was weighed for the first time we were relieved it came out under the limit – not by a lot but enough, all down to good design. Then came the rollout test. Years later, Alessandro Mariani, one of the Scuderia's engineers who was at the test running Michele Alboreto, told me an amusing anecdote. Michele goes out for his first run, he pits, comes to a halt, beckons Alessandro over and whispers three words in his ear: "We are fucked". He elaborated: "The car handles nicely in the low-speed corners but it has NO downforce". He was almost correct – it certainly didn't have anywhere near enough to be competitive.

The windtunnel program lagged the car design to the point that its first run in the windtunnel happened after all the wetted surface drawings had been issued. I remember Eric phoning me, while I was in the windtunnel, to ask about the results. I replied that we had hit the drag target but had only half the amount of downforce our simulation predicted you needed to compete with the frontrunning teams.

That might have sounded flippant, but I was having a déjà vu moment reliving my previous design nightmare: the T950, Lola's first F3000 I designed that also never saw a windtunnel until after it was drawn. That car took 12 months and

Ralph Bellamy's help to sort. This project had all the same hallmarks.

If you are going to produce a slow car best make it an attractive one. People have more patience with a slow pretty car. That's because they don't see any obvious flaws they can point a finger at. Sadly, the T9330 wasn't pretty so fingers got pointed at all the wrong things. At the first test the rear bodywork was reworked to reduce its volume. To no effect, as later verified in the windtunnel.


Meanwhile, my team and I launched into a proper aerodynamic program that within four months had clawed back half the deficit in downforce. Little of this produced upgrade material for the car as the fundamental problem was the chassis shape.

That's the hardest part – to figure out the fundamental cause when you are firefighting. Yet we didn't use what we learned. I guess Eric was too embarrassed to table the windtunnel figures.

Maybe he didn't believe them and thought a simple fix to an errant vortex was all that was required. It didn't stop him producing new suspension parts – geometry after geometry.

Race by race the relationship between Lola and the team became more strained. The straw that broke the camel's back, for Eric, came during a private Monza test held by Ferrari late in the season. Ferrari baselined its car then switched in the latest engine. It went one second quicker. Eric closed the lid on his briefcase, walked out of the garage and took a cab to the airport.

At the end of the season, Eric fired me for two reasons. Well, two he verbalized: not stopping him playing with geometry when the problem lay with aerodynamics, and for not allowing enough damper length to run really soft springs. My reply was to the effect that, with reference to the springs, I wasn't designing a Formula Ford. But ultimately it was his company and what 'Lola wants, Lola gets'.

This could never happen today. If you are starting a new team you purchase permitted knowledge from an existing one. Designing cars today is all about risk management – make an honest car that's easy to set up in the limited time available during a race weekend, bank steady aerodynamic performance and prioritise reliability. If, in spite of this, you still drop the ball, honesty will be your only saviour. 

**“WE HIT THE DRAG TARGET BUT HAD ONLY HALF THE AMOUNT OF DOWNFORCE OUR SIMULATION PREDICTED YOU NEEDED TO COMPETE WITH THE FRONTRUNNING TEAMS”**



## MY F1 DIET

Romain Grosjean's physio and performance coach **Kim Keedle** talks us through the Haas driver's typical daily diet during the Bahrain GP...



INTERVIEW JAMES ROBERTS

PICTURES ANDY HONE



### Breakfast 9am



Egg white omelette with ham, mushroom and onion  
Yoghurt, fruit salad with berries and pineapple  
Decaf coffee

"The benefit of fruits at breakfast are to supply a little bit of sugar for energy, but also fibre which is very healthy and is better than a lot of bread or cheese. Blueberries are a super food, rich in antioxidants which are good at reducing inflammation and improving recovery and to assist with mental acuity.

"Eggs provide protein to stop Romain feeling hungry later in the morning and they contain some fats that are very good for the brain. That's a good kickstart for the day. He'll drink decaf coffee each day, but will have caffeine on race day."

### Lunch 1.30pm

One portion of chicken breast  
Salad: lettuce, cucumber, tomato, carrot and avocado  
Protein bar or shake  
Still water

"This is a light lunch because it's pretty hot in Bahrain, in the high 20s centigrade, so plain grilled chicken, just seasoned with salt and pepper, with a salad. There is avocado in the salad to get some good fats into his diet. Lunch is taken an hour and a half before free practice, so he doesn't want anything too heavy in his stomach when he's in the car. The timetable is different in Bahrain, so there's a gap between qualifying in the early evening.

In that time, Romain will have a protein bar or a protein shake (created from a powder) to keep him going."



### Dinner 8.30pm



Grilled salmon  
Salad: lettuce, cucumber, tomato and carrot; Asian vegetables, broccoli, sweet potato  
Sparkling water

"Again we'll have salad at dinner and keep it light, because of the heat and we'll keep all the meals lean – nothing too stodgy. An alternative during the weekend is pasta with a light tomato sauce. Romain has typically been quite carbohydrate heavy, but at the start of this season he reduced his bread and pasta intake and has gone for more of a paleo (caveman) diet. He now gets his carbohydrates through sweet potatoes and fruits – and says he's feeling more alert. He only drinks water to keep hydrated, but when he's in the car he has a drink with electrolytes to help replace the salts lost from sweating."



Salads form a big part  
of Grosjean's diet during  
a race weekend





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# MAKING McLAREN GREAT AGAIN

The decline of Britain's greatest F1 team has been painful and protracted, but the struggle of 2018 – which couldn't be blamed on Honda – seems to have shocked McLaren back into action. Now, after far too many seasons of abject failure, the necessary rebuilding process to recapture the glory years can finally begin in earnest

WORDS ANDREW BENSON

**Claire Williams** approached McLaren chief operating officer Jonathan Neale at the Bahrain Grand Prix with a question: "How have you guys gone so far forward in such a short time?"

Williams might well ask. Not only does she have her own problems to solve, but McLaren's recovery from a year they ended with the second slowest car to getting cars into the top 10 on the grid three times out of a possible four in the first two races, has been one of the stand-out features of 2019 so far.

Neale's reply? "A lot of hard work."

After a dire start to 2018, McLaren had a corporate moment of clarity. The result was a wholesale restructuring - and its effect has been clear at the start of this season.

Interestingly, McLaren's progress on track has

been inversely proportional to the tenor of its public pronouncements. McLaren's build up to 2019 was a study in understatement. There were no bold predictions; all that was projected was a seriousness about the task at hand - the need to rebuild - and a recognition that it would take time.

"When you have issues," chief executive officer Zak Brown says, "you have to look in the mirror. And the first step is acknowledging and recognising you've got issues and it took us too long to get there."

The decline started in 2013, McLaren's first winless season since 2006. In 2014, they were at least two seconds a lap slower than Mercedes despite having the same engine. Then came the Honda era, characterised by blaming the engine for all the team's shortcomings, and claiming ►









it still had one of the best chassis in F1.

It took a switch to Renault engines in 2018 to give McLaren the jolt of reality it needed to realise just how far its chassis performance had fallen behind the best.

Moving to Renault was, in hindsight, an expensive mistake - it cost McLaren in the region of a net \$100m a year, taking into account the loss of free engines and Honda's sponsorship, and the cost of buying a Renault engine; and the Honda engine is now within spitting distance of the best - but it was a necessary one.

"I don't think we would have known [otherwise]," Brown says, "because what the Renault engine gave us was a great data point against two other teams. When you're in with a single engine manufacturer you just don't have any reference. We thought we'd come out a lot stronger than we did. Another team with Renault engines [Red Bull] was winning races, so it's not the engine. It's gotta be us. And we have now recognised that and have moved towards our issues."

## REVAMPING THE TECHNICAL TEAM

That process has been a painful one. McLaren has been turned upside down in the last 12 months. Over three months last year, three key figures left - chief technical officer Tim Goss in April, then racing director Eric Boullier and engineering director Matt Morris in July. Of the senior design team that started 2018, only head of aerodynamics Peter Prodromou is still in place.

Meanwhile, a major programme of recruitment and restructuring was started. Former Indycar champion Gil de

Ferran, who had started work as a consultant at the Spanish Grand Prix in May, was appointed sporting director at the same time as Boullier left. Andrea Stella, who had joined McLaren as chief engineer in 2015 from Ferrari, was promoted to performance director. And McLaren signed James Key from Toro Rosso as technical director. Key started work at this year's Bahrain Grand Prix.

In addition Pat Fry - a long-time McLaren engineer-cum-designer who had left to join Ferrari in 2010, which sacked him at the end of 2014 - returned as engineering director in September. This was after it became clear to Brown, during conversations with employees, how well respected Fry was within McLaren as someone who worked hard and was "very direct and non-political".

Before the end of the season, Brown identified Andreas Seidl, the former boss of Porsche's successful Le Mans programme, as the man he wanted to lead the entire F1 operation. The German started work as managing director on 1 May.

The point of all this was not only to make sure the right people were in place, but to create a clear chain of command, something Boullier's Goss-Morris-Prodromou triumvirate did not provide.

"I wanted to simplify the structure," Brown explains. "We didn't have a technical director. It's now very simple - Andreas reports to me, James Key reports to him, Pat Fry and Andrea Stella report to James. It's clear now who's doing what." ►





Emerson Fittipaldi  
world  
champion  
1974

James Hunt  
world  
champion  
1976

Niki Lauda  
world  
champion  
1984

Alain Prost  
world  
champion  
1985, 1986, 1989

Ayrton Senna  
world  
champion  
1988, 1990, 1991

Mika Häkkinen  
world  
champion  
1998, 1999

Lewis Hamilton  
world  
champion  
2008

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## A CHANGE IN THE RIGHT DIRECTION

Three roles are key to McLaren's new regime

### INSTALLING THE RIGHT CULTURE

It's notable - and some would say downright impressive - that McLaren's progress in 2019 has come after a season of such upheaval and from a technical team that was very much still a work in progress.

The first key elements of the 2019 design were laid down with Stella, Prodromou, de Ferran and operations director Simon Roberts - the last two very much not design engineers - in charge. When Fry joined, he and Stella became effective co-design leaders. The new recruits and direction were a key part of the rebuilding process.

"You gotta do things differently," Brown says. "So we've done everything, from different structure, to some new people, to promoting some people, some people aren't here anymore. I don't think it's any one of those, but you're not going to get there with more of the same. You've got to make some changes. Our biggest failing previously was a lack of team work, not the lack of individual talent."

Are Seidl and Key the right men to lead McLaren to a successful future? Key has never led a winning team, so inevitably has something still to prove. At the same time, key figures at Red Bull say if they had thought Key was that special, they'd have moved him into the senior team by now.

Be that as it may, Key was in demand. Before joining McLaren, he'd been poached by Williams to be its technical director, only for the recruitment of Paddy Lowe - ill-starred as it has turned out to be - to force Williams to back out of that commitment to Key. With Key available, Brown pounced.

As for Seidl, the 46-year-old German has F1 experience, through his time as a senior figure at BMW's F1 programme from 2000-9, and under his leadership Porsche dominated the World Endurance Championship for three years.

"His reputation, the drivers that have driven for him, people that have worked for him, people I knew within the VW group, people I know within F1 who know him, was extremely good," Brown says. "He is technical and engineering [focused] and understands power units, so he has the skill



**Gil de Ferran** sporting director



**Andreas Seidl** managing director



**James Key** technical director





set. All the team bosses have different skills and his was very much performance of the race car and racing team, and that's what I want someone focused on because they need to be complimentary to my skill-set. To get another one of me isn't what the team needs.

"I like his age, in the sense he can be here for a long time. I like his directness. We get along very well, and I think much of building a successful team is getting the right personalities. That is one of the challenges we had before. There was probably a little too much politics inside the team. Everyone we have lined up now, we are on the same team, we are rolling together, they get along really well, we push each other hard."

## BUILDING A WINNING INFRASTRUCTURE

Had McLaren not already made such obvious progress at the start of 2019, there might have been questions about the effectiveness of the changes behind the scenes – even if there would have been an acceptance the new structure needed time to bed down.

But to already show improved performance at the start of the season, even before Seidl and Key had started work, has been taken as a sign that McLaren is already back on the right track.

"Forward progress helps a lot," Brown says. "To make it into Q3 in Australia was a big boost to the team. Winter testing, having some really good days – big boost to the team. All you can do is get the team moving forward. Culture takes care of itself. You can't mandate culture. All you do is you get everyone rowing in the same direction and then success, even if it's in small incremental steps, becomes contagious. And that's what drives forward culture.

"All you can do is lead the way. So, what I have tried to do is: 'Head down, hard work, look in the mirror, incremental steps', and then those little wins are going to be what drives culture. There's a real hunger that I needed to turn from ▶

Shaikh Mohamed Bin Isa Al Khalifa McLaren chairman



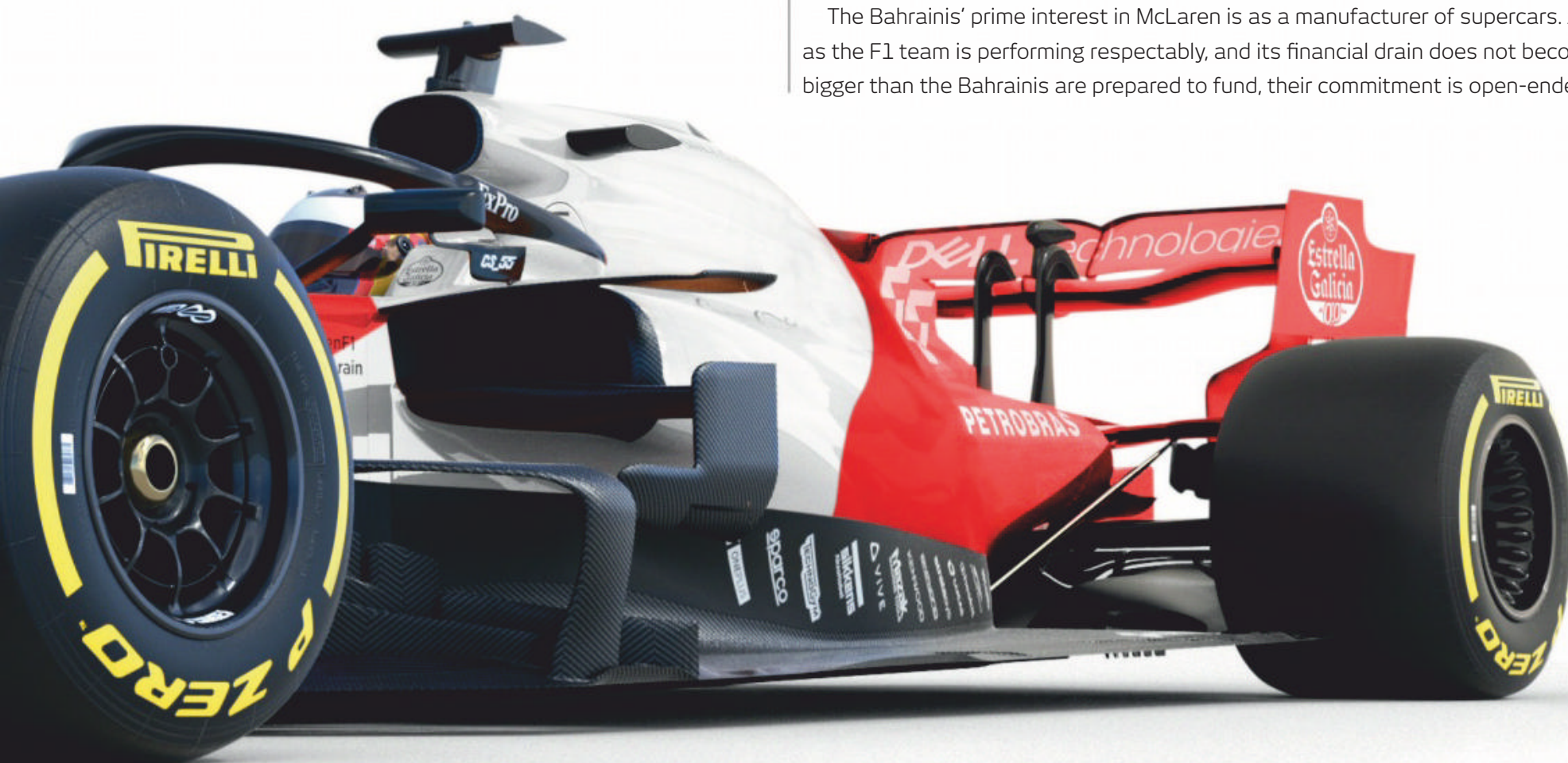
## THE ROLE OF THE BAHRAINIS

**When McLaren was in the process** of splitting from Honda, one of the questions asked most often was how the team would cope with the financial shortfall. The answer was usually: "We're lucky to have very supportive shareholders."

In other words, the owners are rich, and prepared to pay what it takes – up to a point – for success. McLaren's owners are known as "the Bahrainis" – shorthand for Mumtalakat, the Bahraini government's sovereign wealth fund, run by Shaikh Mohamed Bin Isa Al Khalifa, a member of the Gulf state's royal family. He is McLaren's chairman.

For a long time, Mumtalakat was a 50% shareholder, with Saudi billionaire Mansour Ojeh and former chairman Ron Dennis owning 25% each. When Dennis was forced out in 2017, his 25% stake was split between Mumtalakat and Ojeh, making Mumtalakat the majority and controlling shareholder. Shaikh Mohamed sums up Mumtalakat's position: "Management's role is to manage the team. We are here to provide the resources and that is what I have kept pushing for – ie, tell me what you need. And we've supported them throughout this transition. We will see this through."

The Bahrainis' prime interest in McLaren is as a manufacturer of supercars. As long as the F1 team is performing respectably, and its financial drain does not become bigger than the Bahrainis are prepared to fund, their commitment is open-ended.







frustration to positive energy, and then all you can do is make incremental steps.”

With Brown’s new management structure in place,

attention inevitably turns to McLaren’s facilities and whether they are fit for purpose. The McLaren Technology Centre is an architectural wonder but in the current F1, where the likes of Mercedes employs more than

1,000 people, it is simply not big enough, because it also houses McLaren Automotive and Applied Technologies. That should be fixed by the expected budget cap, which should peg staff numbers. But MTC is lacking in other ways, too.

Limitations in McLaren’s own windtunnel have forced the team to do aerodynamic R&D in Toyota’s facility in Cologne for the last few years. That’s not a viable long-term solution for a team that has aspirations of one day returning to winning. So, does McLaren need to invest in a new windtunnel?

“That is as we speak under review,” Brown says. “That is something that Pat Fry, the aero team, Andreas are looking at – what do we do in the future? We recognise we are not

in the most optimum situation and what is most optimum is what we will be doing.” Any final decision will be based on the form of the final 2021 rules and the restrictions they place on windtunnel usage. “Is it better to stay where we are?” Brown asks, “but that windtunnel needs some upgrades? Do you move? Do we do a new one? Do we upgrade ours? And we have been waiting, as part of that is ‘what does F1 look like?’”

He says the answer is “getting clearer now” and “we have a view”. But he won’t say for now what that is. And then there is the question of whether McLaren needs to partner with a manufacturer again if it is to have realistic ambitions of winning another championship.

The Honda experience showed the downsides of that approach, but at the same time the benefits to any team of the chassis and engine departments being fully integrated, when that works well, are clear – as Mercedes has demonstrated over the last few years. And then there are the financial gains.

The reality, though, is that a factory partnership will likely not be available to McLaren in the near future – there is no new car company waiting in the wings to come in, and those that are in F1 currently already have their partners. But Brown does not believe this is necessarily a restricting factor.

“Red Bull won races with Renault so there is no reason why we shouldn’t be able to in the future,” he argues. “We are not in a position to win races now, but that’s not a power-unit issue. Our car’s not fast enough yet. Of course everyone would

**“YOU GET EVERYONE ROWING IN THE SAME DIRECTION AND THEN SUCCESS, EVEN IF IT’S IN SMALL INCREMENTAL STEPS, BECOMES CONTAGIOUS”** ZAK BROWN

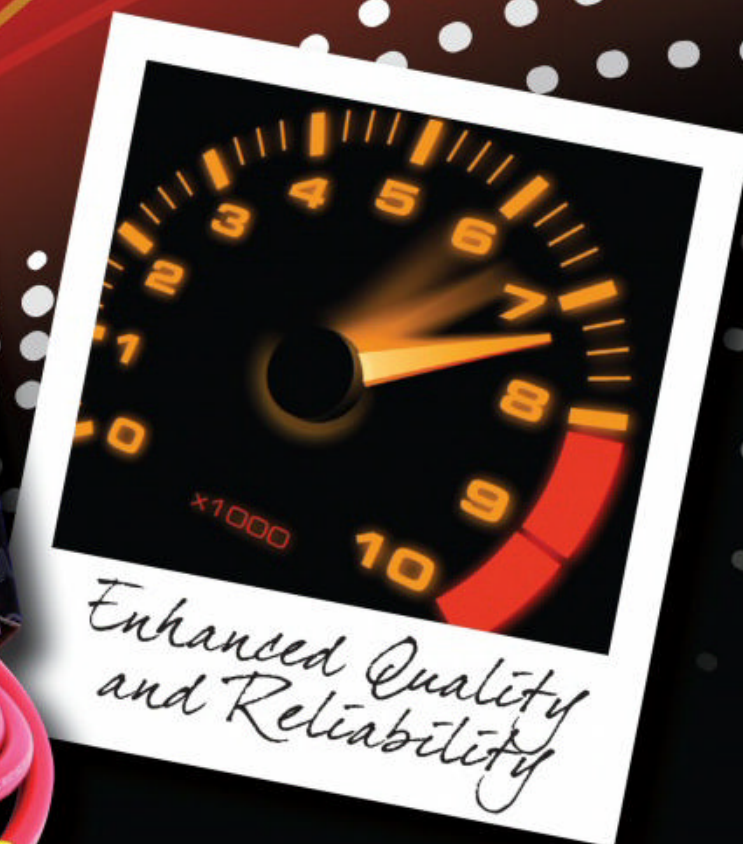




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love works status with your own power and the economics that come along with that, but I don't think it's mandatory to be able to win. We've got a long way to go before we have to worry about it. But if you gave me another 10kw – and by the way I think all the engines are very close right now – we wouldn't be competing for the championship.”

## THE FINISHING TOUCHES

Fernando Alonso's decision to stop driving in F1 at the end of 2018 meant McLaren entered a new season without a driver who had won at least one race for the first time since 1994, when the line-up was Mika Häkkinen and Martin Brundle.

Alonso was a gold standard, and a guarantee the driver was getting the best out of the car. He would be a loss to any team. But the reality is that Carlos Sainz and Lando Norris is exactly the driver line-up a team at McLaren's current level should have. A solid, proven driver of several years' experience and a very talented and promising rookie are more appropriate for a team in the upper midfield than employing one of the all-time greats at a cost of \$25m a year (or indeed \$40m, as Alonso was paid in the Honda era) to struggle to get into the top 10.

“Carlos has a lot of experience and it's good he has been in a couple of different teams,” Brown says. “Lando has proven extremely quick. So as far as ultimate performance of how fast our race car is, those drivers will get the most out of it. Lando doesn't have the experience of Fernando, so the type of feedback you get from Fernando will take some time to develop. [But] Carlos is in his fifth year in the sport, so we're comfortable with our drivers.”

Sainz or Norris might yet establish themselves as A-listers. If not, a superstar can wait until McLaren has a car that can

“WE ARE IN A REBUILD  
PROCESS AND IT'S GOING  
TO BE A JOURNEY”

ZAK BROWN

do one justice. The main task now is getting back into a position where the team can build exactly that.

McLaren is under no illusions that winning races, let alone dominating in the fashion it has

in the past, is some years away. The work of the last 12 months has been about two key things: accepting – for the first time in six years – the reality of where it is; and putting in place the building blocks for getting out of that situation.

The evidence of the first part of 2019 is that McLaren is *starting* to head in the right direction. China was a reality check. The cars qualified 14th and 15th and the track showed up the major flaw of this year's car, a lack of front-end grip – the exact opposite of the rear instability of 2018. But all tracks are not China, and as Brown puts it: “We are in a rebuild process and it is going to be a journey.”

“The key,” de Ferran adds, “is to be humble, focus on the job in front of you. Then things will take care of themselves.”

Andrew Benson is BBC Sport's chief F1 writer

Formula 1 8 constructors' titles



## GOING BACK TO ITS ROOTS

When Bruce McLaren founded his team it was more than just a F1 operation. In its early days, McLaren was as famous for its successes in Indycars and sportscars.

What was its past could well be its future, too. Brown, since he became chief executive, has been exploring the idea of McLaren racing in all three categories again. The first toe in the water was an assault on the 2017 Indianapolis 500 with Fernando Alonso, in a McLaren-branded car run by Andretti Autosport. Alonso's return to Indy this year is with a full-on McLaren operation, albeit with help from the British Carlin team.

It is unsaid for now, but McLaren has basically committed to going back to Indy with Alonso until he either wins it – and completes the unofficial 'triple crown' – or decides

to give up trying. In time, this could expand into a full Indycar championship entry, although it remains to be seen whether this will be as early as 2020.

Meanwhile, McLaren is keeping an eye on the World Endurance Championship and its shift to regulations focused on hyper-cars for 2020/21. The man who will oversee all this is Gil de Ferran,

whose role as sporting director encompasses all three of McLaren's racing activities.

Until he joined McLaren in 2018, de Ferran's F1 experience was limited to a couple of years as Honda's sporting director in the mid-2000s, and a couple of tests for Williams and Footwork in the early '90s. But he is widely respected, not just for his driving success – two Champ Car titles and an Indy 500 win – but also his intelligence, and original thinking. Until now, de Ferran has primarily been focused on F1. That will change

now Andreas Seidl has started his role as F1 managing director.

Brown says: “When Andreas starts, he will be running the F1 team, and I have myself running the business and Gil helping and supporting me in all of our racing activities, but with more of a focus on what and if are we going to do in sportscars, what and if are we going to do in Indycars.”

The timeframe is not yet clear, but sooner or later McLaren will be racing in F1, Indycars and sportscars. Just like it was at the very beginning.

Indianapolis 500 3 wins



CanAm 5 consecutive titles from 1967-71





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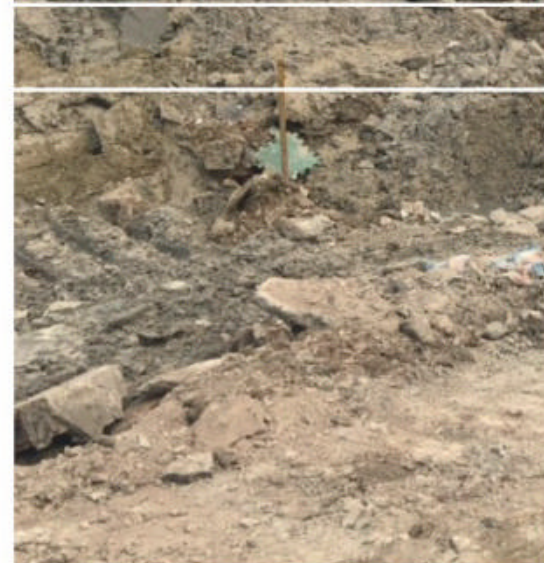
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# BREAKING NEW GROUND

*F1 Racing* has been granted an exclusive look at plans for the Vietnam Grand Prix that will make its debut on the Formula 1 calendar in 2020. Construction work began in the city of Hanoi last month and will take a year to complete

WORDS JAMES ROBERTS  
PICTURES TILKE







## IN THE NORTH OF VIETNAM,

100 or so miles from the Chinese border, lies the country's second largest city. Inhabited by four million people, Hanoi is the cultural capital of Vietnam, mixing a fusion of modernity with old French colonial influences. The city is characterised by ancient temples, lush parks and, as a backdrop, verdant mountains. Over 50 miles from the coast, Hanoi is situated in the delta of the Red River and is a vibrant city, where the scooter has overtaken the bicycle as the most popular form of transport.

In an area 20 minutes from downtown, in the Nam Tu Liem district, work is being feverishly undertaken to clear an area and construct a brand-new permanent pits and paddock to host a world championship Formula 1 race. The first ever Vietnam Grand Prix will make its debut on the calendar in 2020.

This race is a source of great pride for the owners of F1. It will be the first new venue on the calendar since Liberty Media wrestled control from Bernie Ecclestone in 2017.

Two-thirds of the track will utilise public roads already in place, while the high-speed twisty, final section of the lap, and the start/finish straight, are being built from the ground up. The area where the pits will be was, until recently, a lake.

In the last week of March, FIA president Jean Todt travelled to Hanoi, along with track designer ►

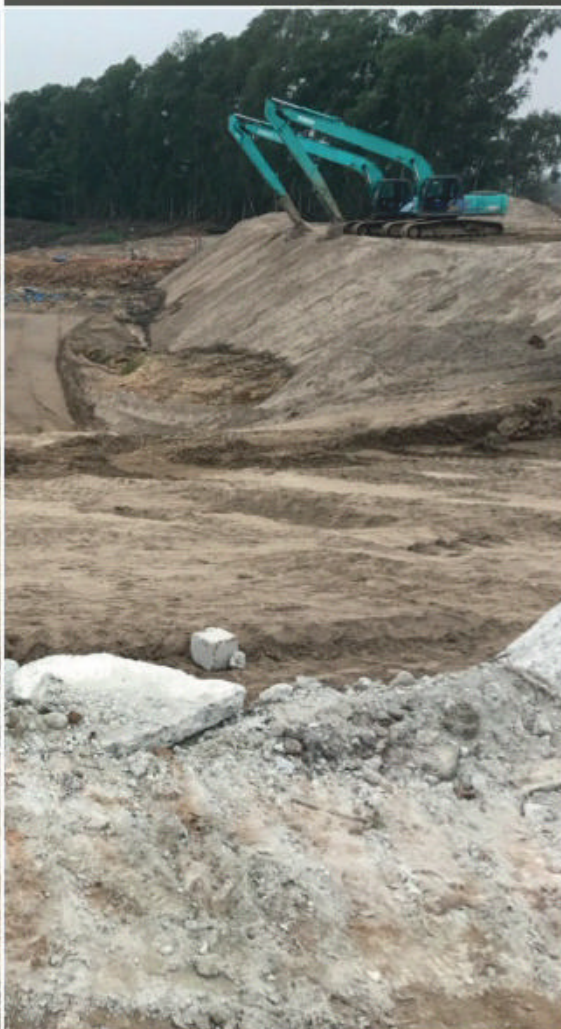




This lake was designated as the site of the pits...



... and by March 2019 it had already disappeared



“IT WILL BE DIFFICULT TO GET A GOOD LAP TIME AS IT WILL BE VERY EASY TO MAKE A MISTAKE – SO HOPEFULLY THE DRIVERS WILL LIKE THE CHALLENGE.”

CARSTEN TILKE



Hermann Tilke (centre) walks the track



The 675m start/finish straight



Turn 9 was formerly part of a golf course

Hermann Tilke to a ground breaking ceremony, alongside representatives of the Vietnam Grand Prix Corporation and the chairman of the Hanoi People's Committee. Tilke and the construction workers have just 12 months to finish the project and turn an area of 88 hectares into a 3.46 mile, 22-turn state-of-the-art circuit.

Computer generated images of the pit building – exclusively revealed by *F1 Racing* – display how the new permanent facility will look. The design on top of the grandstand is based on an old citadel in Hanoi and will be finished in

bamboo cladding to give it a Vietnamese style. The traditional Thang Long architecture of the structure also reveals a bridge for VIPs to access Paddock Club hospitality above the pits.

The circuit will form part of the My Dinh Sports Complex, which already has a football stadium and arenas for swimming and tennis. Similar to Albert Park in Melbourne, the authorities will create the pits and paddock in a public park, which the city's inhabitants can enjoy all year round. The circuit is characterised by wide long straights (the longest is 1.5km)

connected by roundabouts into long braking zones and tight hairpins. The intention is to create a street circuit with overtaking opportunities – more akin to Baku than Monaco.

“There was a close co-operation with the team at Formula 1 and the organisers at Hanoi to design the circuit,” says Carsten Tilke, the managing director of Tilke (and son of Hermann) who is responsible for the day-to-day operations of the company.

“They had a lot of input and we had many discussions about how we could create a good circuit, not only from a driving perspective, but to offer a lot of overtaking too. Of course, we are fixed to some given streets – which are basically the straights – but through simulation tools we have been able to create the best track possible.”

The corner at the end of the longest straight, Turn 11, will feature grandstands on both sides of the track to create what Tilke describes as a “stadium” section. Between those grandstands and the football stadium will be fan zones and an F1 Village, with vendors for both local and international visitors incorporating Hanoian and Vietnamese cultural activities and local cuisine. The stadium will also host concerts during the weekend. The plans for the track are based on a spectator attendance of up to 100,000 people.

The section Tilke is most excited about is the final part of the lap, which allowed his design team to be free-thinking as there are no existing



# HANOI STREET CIRCUIT

**Length of straights:** Start/finish (675m), T5-T6 (800m), T9-T11 (approx. 1.5km)



**T1-T2:** similar to the first corners of the Nürburgring

**T12-T15:** very narrow, walls directly next to the track, no room for mistakes (like Monaco, Ste Devote)

**T16-T19:** very fast corner combination (like Suzuka Esses)

**T20-T22:** like Malaysia T12-T14, fast right-left turn, easy to make mistakes, important to have a good exit of T22 for the next straight

roads to compromise with. He describes it as very technical, as well as high-speed, with little run-off and no margin for error.

“The whole track has a nice combination of fast corners and long straights, so it will be difficult to find a good setup for the teams,” he says. “Our simulations have shown it will offer good racing and plenty of overtaking options. It will be difficult to get a good lap time as it will be very easy to make a mistake – so hopefully the drivers will like the challenge.”

In early April, five Tilke engineers moved to

Hanoi to live full-time to work on the project. The difficult quest will be to finish on time.

“The design and planning process is quite far down the line,” adds Tilke. “Almost everything is ready, but the construction has only just started. The ground breaking ceremony was in late March and now we have to get a lot of machinery on site to get the process to build the venue underway. Although the calendar for 2020 hasn’t been finalised yet, we have been given until the start of next season for Hanoi to be ready.

“That’s an ambitious target but they are used

to building fast in Vietnam,” continues Tilke. “But of course it needs a standard and quality, so we have to work closely together and put all our effort in to make it happen. Like other sporting projects we can’t afford to finish one week late. Cars need to be on the track for the first free practice session on Friday morning of the race weekend.”

And when they do, Vietnam will become the 33rd different country to host a Formula 1 world championship race, and the first new grand prix in the post-Bernie Ecclestone era. **F1**



This famous German name hasn't graced Formula 1 since the most successful driver in the championship's history bowed out at the end of 2012 – until now. Michael's son Mick joined Ferrari's Driver Academy this season and recently made his F1 test debut for his father's old team in Bahrain, watched by a (misty-eyed) *F1 Racing*



# SCHUMACHER, R E V I S I T E D





PICTURES: JERRY ANDRE

**Mick Schumacher's** tempestuous arrival in Formula 1 was greeted by a storm: a Bahraini sandstorm, of the sort that reduced visibility to similar levels as freezing fog – sprinkling cars and people with a fine yet persistent layer of grit that tasted vaguely of wet cement.

That was on the Monday before what was arguably the most anticipated F1 debut of recent years, and while the dust had settled by Tuesday morning, it remained as an insidiously slippery coating on the Sakhir track's surface.

Besides, another storm was brewing. This

WORDS ANTHONY PEACOCK

PICTURES  **motorsport**  
IMAGES

time, thick black clouds pregnant with rain that would soon cascade over the circuit, bringing proceedings to an unexpected halt.

So the circumstances were, to put it mildly, fraught. Yet against the desert landscape, in the eye of the storm, Mick Schumacher was an oasis of calm – despite the intense scrutiny that followed his every move.

Schumacher Junior making his Ferrari debut would have been an emotionally charged event on any occasion, but of course there was the elephant in the room: an appropriate metaphor

because the legacy of his seven-time champion father at the Scuderia is truly gigantic.

Nobody really dared to ask him about Michael – the enormity of the question was too great, the sensitivity of the situation off-limits – although everyone, of course, was thinking of Michael. Probably nobody more than Mick himself.

The striking physical resemblance is one thing – although Michael was six years older than Mick is now when he first drove a Ferrari (with two F1 titles already behind him). Complete with the omnipresent Sabine Kehm, the Schumachers' loyal agent, at Mick's side, the tableau at Bahrain could easily have been 20 years ago. But it's also the way that Mick speaks like Michael, moves like Michael. The supremely rational, compact, ►







**“I want to arrive in Formula 1 being a complete racing driver, as prepared as possible, and time will tell if that’s next year or the following years”**

answers to questions, with a touch of humour and a half smile that manage to stop them from being abrupt.

When Mick emerged from the Ferrari motorhome just before 9am wearing red overalls for the first time, there was almost an audible intake of breath. It felt a bit like seeing a ghost. But mostly the atmosphere was one of excitement, like opening the first page of a novel you’ve been desperate to read for a long while.

Whether it was because of the impending bad weather or just his eagerness to get going, Mick was rolling down the pitlane shortly after the track went green: no doubt much to his relief, as it meant that he could finally stop feeling like a



**Mick’s Ferrari runs went smoothly (above) and he looked immediately at home in red overalls (below left)**

the glare of publicity, driving a cobbled-together 412 T2 fitted with the new V10 engine. He managed only 20 laps.

Mick did 56 in a dominant car, his every move tracked by a posse of media. Again, that didn’t really bother him. “I was just concentrated on the job that I had to do and I tried to enjoy the day,” said Mick afterwards. “No problem.” And was he surprised by the times he set? “To be honest, no.”

His run in the Ferrari-engined Alfa Romeo the day after was almost an anti-climax. He completed another 70 laps, going slightly slower on the same tyre – which you would probably expect, given the performance differential between the two cars. But with the usual testing

caveats – and the fact that track conditions during the two days were very different – there’s potential for an interesting conclusion there too.

Mick said his final Ferrari runs were about exploring performance, and the day in the Alfa put into place what he had learned the day before. But with a driver so new to F1, it would be reasonable to expect the biggest early improvements to come from the driver rather than the car. The fact



**After his Ferrari runs Schumacher switched to the Ferrari-engined Alfa for day two, managing another 70 laps**

goldfish in a bowl and get on with what he had come to Bahrain to do.

It says a lot about the weight of expectation on his shoulders that when the first times came in, showing Mick towards the bottom of the screens, some people were actually surprised and disappointed. Lewis Hamilton was one of the drivers on track that day for Mercedes, yet Mick was somehow meant to beat him within his first hour in a Formula 1 car.

It took him a few more hours, but he did it. In fact Mick was on course to end the day fastest of all, before Max Verstappen ruined the headlines by going quicker in the closing minutes. On his first day of F1, Mick ended up second (albeit on

tyres two steps softer than those of Verstappen).


Yes, of course it’s just testing so times mean nothing – and it was an odd day with effectively a three-hour stoppage due to the rain. But everyone agreed it was an impressive debut.

As for Mick himself, he typically took it in his stride. “The emotions I can tell you were really nice,” he reported. “It was feeling like home already; it was beautiful to make those first laps and to see all those guys working on the car and working with me. I felt very comfortable.”

It was somewhat different to the scene 23 years ago, when Michael first drove a Ferrari on 16 November 1995 at Fiorano. On that occasion, Michael was in plain white overalls, away from

Mick wasn’t able to improve on day two might suggest it took him very little time to reach his own limits and those of the cars – at least for now.

So for Michael’s son, Formula 1 is a question of when, not if. Maybe even as soon as 2020. “Obviously it’s my first year in Formula 2, so let’s see how it goes,” he concluded. “I want to arrive in Formula 1 being a complete racing driver, as prepared as possible, and time will tell if that’s next year or the following years. I’m taking everything one step a time.”

In Bahrain, this involved making his F2 debut and F1 debut – with two different teams. It may be one step at a time, but those small steps can be measured with Neil Armstrong’s ruler. 





VALTTERI BOTTAS



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# { YOU ASK THE QUESTIONS }

## VALTTERI BOTTAS

It's not just the beard that's different about the Mercedes driver this season. Aside from an explanation for his Australia radio message, he reveals a unknown musical talent and a love of Esports...

WORDS JAMES ROBERTS

PICTURES  
GLENN DUNBAR



**motorsport**  
IMAGES

**Walking into the 2019 F1 paddock**, Valtteri Bottas appears a changed man. He looks invincible. For the first time in his career, the 29-year old has led the F1 world championship. A dominant win over team-mate Lewis Hamilton in the Australian GP gave Bottas an air of superiority. The handshake is now a little firmer. The steel in his eyes more resolute.

After failing to notch up a victory last year he became a target for some vocal criticism. The best way to swat his naysayers away was to start the new season on a high. He did exactly that in Melbourne, beating Hamilton by over 20 seconds and securing fastest lap on the way. On his cool-down lap, over team radio, Bottas exclaimed: "To whom it may concern, f\*\*\* you!" The spontaneous, out-of-character remark was indicative of the harder, more ruthless Bottas of 2019.

As he will shortly explain, his mindset altered over the winter. He has prioritised himself. Make no mistake, the bearded Bottas is a transformation. He is typically Scandinavian in the way he comes to the point briskly and without verbosity. He's more terse than usual, but that doesn't mean he's lost his sense of humour.

As he tackles *your* questions – on saunas, musical instruments and Hamilton – Valtteri even pokes fun at himself, asking us at one point to refer to him as Corporal Bottas. But we start with the breakfast he revealed he ate on the morning of his Australian GP win. Porridge...

**What do you like to have on top of your porridge?**

Jason Bird, UK

I usually have cinnamon, berries and seeds – different kinds of seeds. I love berries, especially Finnish hand-picked berries.

**F1 Racing:** No honey?

**VB:** Sometimes, if I'm about to do a hard training session, then maybe a bit of extra carbohydrate.

**Which driver from the past would you most like as a team-mate?**

Apostolos Dimakis, Greece

Easy. James Hunt.

That would have been very interesting...

**Will you one day try out rallycross?**

Daryl Chaffey, UK

It looks really fun. I've tried rallying in the past, but not rallycross. So why not? ►



## {YOU ASK THE QUESTIONS}

### Who is the best-ever driver from Finland?

James Kruuse, Kenya

Well, if you look at the statistics it's Mika Häkkinen, a double world champion. But hopefully I can change that one day.

**F1R:** We were chatting to your manager Didier Coton before this interview [who also used to manage Häkkinen] and he wondered if you might choose a rally driver like Juha Kankkunen or Ari Vatanen?

**VB:** I was only thinking of Formula 1... [thinks about the options carefully] – but no, I'll stick to Mika.

### Your attitude and approach appears different. What did you do differently this winter to prepare?

Roger Scadeng, UK

It is right, my attitude and approach for the season is quite different. Some of it was working it out for myself – but also something has changed. Last winter I did much more stuff that I wanted to do, rather than doing

the best thing a racing driver should do in theory. I've been able to be a little more relaxed and focusing on stuff that is good for me. For example, doing things such as taking part in the Arctic Rally.

**F1R:** We see pictures of you chilling out in the forest, by the lake with your dog, and you seem a lot more content.

**VB:** Yes, exactly. It seems to help. After Australia, I went to Finland for a week and just did what I wanted to. Of course, all the training I kept to, but the rest of the time I was just enjoying myself.

### Do you think you can beat the Ferraris this year?

Bob Dixon, UK

Based on Melbourne, we think yes. But it's obviously only the first race and I think the next few races are going to be the real test of where we are.

### What did you learn after competing in the Arctic Rally?

Jukka Kaunisto, Finland

Well, I learned how to drive a rally car for a start, and over the course of the weekend was really able to improve myself in that discipline. I've got very limited

experience since it was the first proper rally that I did, but it's an interesting sport because you can improve so much. My car control skills really developed and it was great fun to drive that car.

**F1R:** How difficult was it to trust what the co-driver was saying compared with what your eye was telling you to do behind the wheel?

**VB:** It took some time to get used to it and by the end of the rally, I was very comfortable. It was much more automatic, I didn't really have to listen so much and could focus on the driving and started to form a picture of what was coming ahead.

Initially, I needed work and during testing [for the rally] I made a couple of mistakes because of that. Sometimes I wasn't able to listen carefully at the same time as I was really pushing the car to the limit. But after some practice it worked and we got better.



“  
I DID NATIONAL  
SERVICE IN  
2008 WHEN  
I WAS ABOUT  
18, SO YOU  
HAVE TO CALL  
ME CORPORAL  
BOTTAS NOW  
”

### Did you enjoy your national service experience in Finland?

Eero Simojoki, Finland

I did actually, I really enjoyed it. I think it's good for turning kids into men. It wasn't easy. It was strict and tough but you learn a lot about coping with more

difficult situations. For example, if I'm travelling and I miss a flight or if I end up in a bad hotel, it's not the end of the world because I remember those times that I was sleeping for two weeks in a freezing cold forest.

So it's easier for you to put things into perspective. Or, if you complain about a meal, then I also think about the portions of meals we'd have in the forests...

**F1R:** When did you do it?

**VB:** I did national service in 2008 when I was about 18, so you have to call me Corporal Bottas now.



**What is your opinion on sim racing?**

Jarl Teien, Norway

I think racing in Esports is pretty cool. The simulators and the games are getting better and better – more and more realistic.

There is a proper racing series now and when I was younger I used to play a lot, just for fun. But for the last few years I've been quite busy so I've been playing less.

**Would you ever consider a switch to the WRC like Kimi Räikkönen did in 2010?**

Kerry Millward, UK

Who knows? Time will tell...



**What have you learned from Lewis Hamilton over the past two seasons?**

Alan Cason, USA

A lot of things. You learn from every team-mate and each driver has their own tricks on different types of circuit – that's probably the most interesting thing. Every driver has their best corners on

the calendar and you try to study the telemetry or on-board footage of how they do it to see if there's anything you can learn. Usually it's small details like racing lines, driving style or setting up the car.

“  
**THERE IS THIS WEIRD GROUP OF PEOPLE WHO WANT TO DRAG YOU DOWN... I DON'T GET IT, SO I THOUGHT I WOULD SEND SOME REGARDS!**  
ON HIS TEAM RADIO MESSAGE FROM AUSTRALIAN GP  
”



**What did you mean with your comment on the Melbourne cooldown lap?**

Iain Duthie, UK

I meant to send my best regards to all the people who have been putting me down in my difficult times – that's it really. It came spontaneously, I didn't plan it.

When you have good times, I love the support, as it really helps.

But when there is this weird group of people who want to drag you down... I don't get it, so I thought I would send some regards! [laughs] ▶

A dominant win in Australia was just what Bottas needed after a disappointing 2018







“  
WE HAD A DOG  
CALLED RUBEN  
WHEN I WAS  
A KID AND IT  
WAS NAMED  
AFTER RUBENS  
BARRICHELO  
”

he asks: “Could you still play them today?”]  
**VB:** I don’t know, I need to try. Maybe at the Christmas party...

**What is your longest time sitting in a steam sauna?**  
Kamil Golab, Poland

Steam sauna? Not sure. I don’t really use a steam sauna that much. I use a Finnish sauna. But it’s quite difficult to put a time frame on it. It must be 30

minutes or something. Normally, when I go to a lake house with friends and take a sauna with a few beers, we go in for ten or 15 minutes, go outside, then go back in again. We repeat that about five times. But after 15 minutes it doesn’t get that enjoyable for anyone.

**Coffee or vodka?**  
Paul Taylor, UK

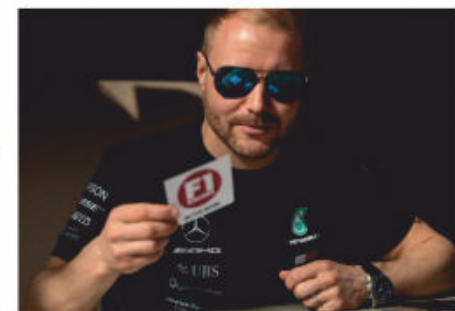
Depends if I have a day off or if I’m here at the track. Today, I would choose coffee. Monday I might choose vodka.

**Is it true that you once had a dog named Barrichello?**  
Michael Parker, New Zealand

We had a dog called Ruben when I was a kid and it was named after Rubens Barrichello. So, correct. My current dog is called Fanni – it’s a Finnish girls’ name.

**Have you ever spoken to Nico Rosberg to understand more about how he managed to beat Lewis over a season?**  
Paul Lewis, Ireland

No, I haven’t honestly. We’ve normally just had general chats and not gone into any great detail.



**Hi Valtteri, does your beard mean no more Mr Nice Guy?**  
Sasa Svalina, Croatia

[Spoken slowly and menacingly] Yes.

**How tempted are you to buy clothes from Lewis Hamilton’s fashion range?**  
AR King, UK

I’m not very tempted because I think it would be weird if I was walking with the ‘LH’ logo on my top – some of the stuff is nice, but no thanks...

**Is this your year to be champion?**  
Thomas Guilfoyle, USA

Thomas – you are right, yes it is. That’s my plan. 🍀

**Do you meditate?**

Michael Cane, Canada

No I don’t... never.

**Have you ever learned to play an instrument?**  
Jenny Salmon, Australia

Yes, drums. When I was a kid, a little bit of piano, but that’s completely gone. We had to learn to play – [he pauses and places his hands in front of his mouth and waggles his fingers]

**F1R:** The recorder?

**VB:** Yes, exactly. But I preferred the drums. I haven’t played them for many years though.

[Mercedes’ press attaché Felix Siggemann is intrigued and, while no doubt concocting in his head a PR stunt,



Bottas insists that, despite the smiles, there will be no more Mr Nice Guy



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# THE LONG INTERVIEW

From a small village in Romania, Otmar Szafnauer's family fled the communist dictatorship to begin a new life in Detroit in the 1970s. Working in the car industry led to Szafnauer meeting Adrian Reynard, who in 1999 offered him a job at his new BAR team. Ten years later, that experience made him the perfect candidate to run the day-to-day operations of Force India, which has now become Racing Point.

Over lunch in Oxford, we hear the extraordinary life story of the man whose love of classic American cars prompted him to convince his father to flee to the United States...

THIS IS  
OTMAR  
SZAFNAUER

INTERVIEW JAMES ROBERTS  
PORTRAITS ALISTAIR THORPE









here is a little corner of Oxford inhabited by F1 royalty. The area north of the city, known as Summertown, is where Mercedes chief Toto Wolff resides. McLaren's racing director Gil de Ferran recently lived in the house once owned by Eddie Jordan. And our very own technical consultant Pat Symonds is five doors down from today's interviewee, Otmar Szafnauer.

The Racing Point team principal suggests we meet at his local. The converted boathouse is now a beautiful

restaurant on the river, offering punting, fine wine and delicious cuisine. Szafnauer regularly brings friends visiting from the States here, for a taste of unspoiled England.

He shows us the area where a live band performed for his 50th birthday party, a few summers ago. As Otmar casts his eye over the menu and selects a vintage red wine, the owner of the Cherwell Boat House pops into the cellar for us. He returns brandishing a fine Spanish Vega Sicilia red with a sticker around the cork, which reads: 'For Otmar'. "I always make sure they have a few vintage wines in their cellar for me, such as a Margaux, Dominus or a Harrison Hill," says the Racing Point boss as he churns the vin rouge around his glass.

We begin our conversation far away from this idyllic location, by starting with his extraordinary upbringing in Ceaușescu-run communist Romania.

**F1 Racing:** Otmar, you have an unusual backstory since you grew up in the 1960s behind the so-called Iron Curtain. Were you aware of the political situation at the time?

**Otmar Szafnauer:** I grew up on the western edge of Romania, close to the Hungarian border. My father was of German descent, but my mother was Romanian. I grew up in a small

**Szafnauer is a regular visitor to the Cherwell Boat House, which has fantastic views of the River Cherwell**

village of 5,000 people which was quite rural – a lot of farmland. At the time, all I cared about was playing football or with the dog, not the bigger political picture.

My dad regularly applied to leave the country [he was born in Pennsylvania and returned to Europe when he was 14] but they wouldn't let him. When I was seven, he tried to escape and was caught. Sometimes, if they caught you at the border they shot you. In Romania, surrounded by other Communist countries, it was hard to get to the West. My father was then imprisoned. From what I understand, during the time he was in prison, President Nixon met with the dictator of Romania, Nicolae Ceaușescu. Back then there were over 40 American families living in Romania, and they did a deal that allowed all the families to leave. And that included us.

When my father was allowed out of prison, they gave him his American passport and said he was free to go. The reason we ended up back in America was because I absolutely loved their cars. This was 1972 and the cars I adored were '57 Chevys and Cadillacs with their big rear wings. We had the choice of going to Germany, but I said we should go to America, despite none of us speaking English. We got a Pan-Am flight out of Bucharest, flew to New York and on to Detroit. That was the perfect place for my love of cars.

All my life I spoke German to my father and Romanian to my mother. In Detroit, there were a lot of German immigrants that could speak the language. At school there was a dinner lady and she was the only one there who spoke a language I could understand. I spoke to her for two or three minutes every day in German and the rest of the time I was immersed in English. It took me three months to learn the language and six months to be fluent. This was at the age of eight.

**F1R:** Did you always want to work in the car industry?

**OS:** Not really. At high school I remember thinking 'what am I going to do with my life'? One thing that came easy to me was





**“SUDDENLY I WAS ON THE GRASS WITH NO WAY TO SLOW DOWN. I HIT A TYRE BARRIER WHICH ACTED AS A RAMP AND I NEARLY ENDED UP IN THE CAR PARK”**



mathematics, and I thought about being an engineer – but my dad said they didn’t make much money, so I chose the most difficult engineering discipline I could: electrical engineering and electronics. From there I got a job at Ford.

A little bit later I went to a Jim Russell Racing School. I was in my mid-20s – too old, really, to start a career. I had a bit of success, raced in Formula Ford with a ’91 Reynard and won a few races. Then I had a massive shunt.

It was the last event of the season, a wet race, at a venue called Waterford Hills. Going into Turn 1, a quick right-hander, my wet feet slipped off the brakes. Suddenly I was on the grass with no way to slow down. I hit a tyre barrier which acted as a ramp and I nearly ended up in the car park. It could have been really bad. Instead my car hit a ticket seller’s hut. It was a huge shunt. Every corner on the car was destroyed and the roll cage saved me.

I had concussion and for about ten days after, the doctor said that I was going to feel like I was floating and that’s exactly how I felt – very woozy. Didn’t put me off racing at all... I think the younger you are, the less you understand the risks. But I had a second shunt the following year, which proved too costly, and that ended my racing career.

**F1R:** Have you driven anything since then?

**OS:** Not until last year, when I did seven laps in a Radical at Silverstone. It was absolutely great. It was a BRDC trackday and I bought a share of this car, along with [former Indycar and F1 team owner] Adrian Reynard. I just haven’t found the time before and would love to do more – it was really cool. The Radical is powerful, light and forgiving. When you understeer and correct it, it bites, when you oversteer, there’s no sudden snap. And they’re fast too. Copse corner was brilliant! I followed Reynard for a couple of laps to show me the lines – he was in a Corvette – and very quickly I thought ‘I don’t need to follow you anymore!’

**Trained as an electrical engineer, Szafnauer also tried his hand at Formula Ford until a crash forced him to stop**

**F1R:** Back to your role at the Ford Motor Company – you moved into a section that was involved in new concepts?


**OS:** Yes, I was in strategic planning and then joined a branch called NCO, which stood for New Concepts Organisation. I had the job of coming up with sports and performance ideas. I came up with two concepts. The first was a performance SUV. This was the mid-1990s when Sports Utility Vehicles were just starting to become popular. My idea was for an SUV with a lower centre of gravity, better handling, better suspension and a more powerful engine. Never made it, bad idea Otmar...

The other concept I came up with while in the NCO was a two-seater Indycar for the road, called the Indigo. It was really cool. Carbonfibre tub, pushrod suspension, sequential gearbox, with a stressed 6-litre V12.

Adrian Reynard built two of them, a show car and a go car – and NASCAR owner Jack Roush still has them, I believe. That’s how I met Adrian Reynard, and then one day he said to me, ‘I’m starting a Formula 1 team, why don’t you come over to the UK and work for me.’

I’d been with Ford for 12 years and left in 1998 and moved straight to Brackley to join British American Racing. ▶





**“WHEN I STARTED  
WITH FORCE INDIA WE  
WERE NINTH IN THE  
CHAMPIONSHIP WITH 280  
PEOPLE AND I’VE GROWN IT  
TO THE 425 WE HAVE TODAY.  
WE ENDED UP FOURTH  
TWICE AND SHOULD HAVE  
BEEN FOURTH LAST YEAR”**



**F1R:** Living in the USA at that time, were you aware of the Formula 1 scene?

**OS:** Oh, absolutely. I went to my first GP in Detroit in 1984 and I was hooked. I’d watch every race at 7am on a Sunday morning. I knew quite a bit about F1 and Reynard had a big reputation in America. He said he needed an operations director and by now I had a degree in finance and economics. And I’d understood racing, having done a bit myself.

We had Jacques Villeneuve and Ricardo Zonta driving for us. The shareholders were made up of British American Tobacco 50%, Villeneuve’s manager Craig Pollock 35%, and Adrian Reynard 15%. Our budget was £45 million a year which BAT put in. But we kept over-spending. Eventually, BAT took over most of Reynard and Pollock’s shares, then Honda bought 55% and eventually Honda took all of BAT’s shares. But, by that stage I’d left and gone to Jaguar...

**F1R:** Did you actually work at Jaguar Racing?

**OS:** It’s a funny story. Indycar driver and team owner Bobby

Rahal was friends with the Ford Motor Company. He took over as team principal of Jag, but he said he needed to take care of his Indycar team. He wanted someone with operational experience and asked me to come and join him as COO. So I took up the challenge.

Then overnight, the senior management changed at Ford and Niki Lauda was employed above Rahal. I don’t know what happened between Lauda and Rahal, but they went their separate ways two days before I was due to start.

I was at a wedding on the Friday night and was set to commence work on the Monday. At the wedding, I received a phonecall to be told Rahal had been fired and that I didn’t need to bother coming in on Monday. My work permit at the time was dependent on having a job in the UK, so I was a bit concerned about that – but I had signed a three-year contract.

Over the next six months I negotiated an exit out of the contract with Sir John Allison, James Allison’s dad, who was working at Jaguar at the time.

I won’t go into too much detail, but I earned more money *not* working at the Ford Motor Company than I did in the 12 years that I did work for them...





It was at a wedding in 2008 that Otmar came up with the concept that was developed into F1's live timing app

**F1R:** You went back to Honda, but then left F1 when they pulled out of the sport suddenly at the end of 2008...

**OS:** I had a year trying to figure out what to do next, so I had this idea of a timing app, and this came from watching the data on the pitwall and in the garage. I had an iPhone, which was relatively new then. I was at the back of the church at a wedding one Saturday afternoon and discovered with my phone I could start looking up football scores – live. Wow, I thought, wouldn't it be great to put the data you can get from the pitwall and have it on your phone? To be clear, this was when we were waiting for the bride to come in... Later that year I was in Bernie's office showing him the concept and the following year it had launched. I watched the start of the 2009 Monaco GP on my phone from the timing app.

**F1R:** You were soon back in F1 with Force India when it did a deal to use McLaren's gearbox and Mercedes engine package...

**OS:** There was a hole at the team when their chief operating officer Simon Roberts decided to return to McLaren, rather


than stay at Force India. Both former McLaren boss Martin Whitmarsh and Bernie Ecclestone recommended me to Force India owner Vijay Mallya. I joined in 2009 and have been in the role ever since. When I started with Force India we were ninth in the championship with 280 people and I've grown it to the 425 we have today. We ended up fourth twice and should have been fourth last year.

The secret to our success, despite being underfunded, is focus. Focus on what's important to make us go quick. And apply that to every decision – including hiring personnel, how you spend your money, which drivers you get in. And I have a very good relationship with our technical director Andrew Green. I've known him 21 years as he was chief designer at BAR and I hired him from Wirth Research after he'd had a spell at Red Bull. We see eye to eye and get on very well.

**F1R:** How difficult was it with Vijay in the latter years with his financial troubles with the Indian authorities?

**OS:** At the beginning not too difficult, but tricky towards the end. To be fair to Vijay, when he didn't have those issues he ▶



A man with grey hair, wearing a white button-down shirt, is looking off to the side. He has his hands in his pockets. The background is a solid grey.

**“THE EARLY DAYS  
WITH FORCE INDIA  
WERE GREAT AND THE  
PARTIES ON THE INDIAN  
EMPRESS IN MONACO  
WERE SOME OF THE  
BEST PARTIES I’VE  
EVER BEEN TO”**





funded the team, but when they happened we struggled a bit. The team couldn't survive without the change we had last summer with administration and Lawrence Stroll coming in.

But the early days with Force India were great and his parties on the Indian Empress in Monaco were some of the best parties I've ever been to. Suddenly on his boat you'd see the Tottenham Hotspur manager of the time or a random royal.

The boat would have three separate parties. On the huge top deck there would be a DJ blaring out techno music with everyone dancing, drinking, having fun. On the second deck it was a different genre of music but you couldn't hear the deck above you. Both were deafening but the boat was so big. On the bottom floor there was a glass fishbowl and you needed a special pass to get in there. Inside, Vijay would be smoking cigars, entertaining Anthony Hamilton, Prince Albert, Bernie, the drivers... They could see out, but you couldn't see in.

I remember one time the captain appeared a little worried with how many people were on the boat and he stopped people boarding because he thought, if everyone went to one side, it could easily list and topple over. If they were all equally distributed – there would be no problem. I asked him at what point he got worried and he said: 'Right now there's 700 people on board. Now I'm worried!'

**F1R:** What is the future plan for Racing Point?

**OS:** Ever since I've been here, we've worked hard to make the team better and better – and made some strategic decisions

## CV

Otmar  
Szafranauer

<b>2019</b>	Team principal & CEO, Racing Point
<b>2009-18</b>	Chief operating officer, Force India
<b>2002-08</b>	Vice president, Honda Racing Development
<b>1999-00</b>	Operations director, British American Racing
<b>1995-98</b>	Strategic planning, Ford Motor Company
<b>1993-94</b>	Programme manager, Ford Motor Company
<b>1986-92</b>	Engineer, Ford Motor Company



Racing Point's 2019 line-up of Lance Stroll (above) and Sergio Perez (below)



along the way. Our next steps are to continue with like-minded individuals to progress further and expand into a new factory.

The philosophy I have is two-fold. The first is to make the car as quick as possible, and secondly to make the team the best place to work. But what you might consider to be a good place to work is different to what someone else will think. Some might like a pat on the back after a good job, others consider the money, some want to compete at a high level while others are happy to punch above their weight. You need to know your staff and deliver for them – getting to understand all their individual incentives is not an easy thing to do – but I try. When you compare Force India with the McLaren Technology Centre it's night and day, but some people left McLaren and came to us because they preferred it.

**F1R:** We began your story with the seven-year old running around a small village in Romania liking American classic cars and have finished with your job as team principal of one of the ten Formula 1 teams. You could never have predicted the journey your life would have taken...

**OS:** Never, not in a million years. Had I not joined the Ford Motor Company, I would never have met Adrian Reynard, because I would never have been in charge of Sports Performance Vehicles – and I would have never come over to Formula 1. It wasn't on my career trajectory, it has mainly been circumstance.

But I tell young engineers to have a five-year plan in their head, then you naturally carve out the path to get there. Everyday, little decisions you make have that plan in mind.

It's the same for me when I take a team from ninth to fourth. What have I got to do? And it's little decisions based on the greater plan each day. Areas to strengthen, tyre engineers, windtunnel model makers... For me, the next five years are to make Racing Point as good as possible for the new owners and to get it to a position where it's not so dependent on owner financial input.

I remember at the very beginning with Vijay. In my first budget meeting in Bahrain, we finished ninth in the championship and he asked how much prize money we were getting and how much from sponsorship? In total, it left a shortfall in our operating budget of \$55 million. But then he put that amount in.

My first thought was: ten years of this is \$550 million – you're going to get sick of this. So I suggested we set up a commercial team, because even if they found us \$30 million in sponsorship (at the time we had about \$2.5million from Medion), which means he's only putting in 20 million not 55, we could go twice as long. He said 'you worry about performance, I'll worry about the money' – but it wasn't sustainable, so we put a commercial group together which has expanded from zero to 12 people today.

My next five years are set on performance and financial viability. But they are not complementary – that's a hard thing to achieve in Formula 1.





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No. 76

WORDS JAKE  
BOXALL-LEGGE  
PICTURES  
JAMES MANN

# THE McLAREN M23

McLaren's long-lived multiple  
championship-winner of the 1970s









**F**ormula 1's mindset is now so entrenched in the philosophy of delivering a new car every season that it seems totally unfathomable for the same car to remain in competition for six years. But it used to be that a huge technological step could yield an advantage that ruled the roost for several seasons; Cooper's rear-engine advances gave it the edge until Lotus took the next steps via monocoque chassis that dominated the scene in the 1960s and early 1970s. The 25, 33, 49 and 72 each enjoyed more than one season at the sharp end.

While the 72 owed much of its longevity to Lotus losing itself down the rabbit hole as it tried to conjure a similarly innovative successor, Gordon Coppuck's McLaren M23, which arrived in 1973, responded to development and remained competitive until 1977. No doubt inspired by the 72, which had influenced the design of his M16 Indianapolis 500 challenger, Coppuck also saw the benefit of the low wedge-shaped chassis, which would serve to keep the centre of gravity as low as possible. This also moved the roll centre closer to the ground, and was a key feature in ensuring that the M23 was a lot easier to handle than the lozenge-shaped M19C it replaced.

The previous M19 family of cars were no slouches, but development was limited in comparison to the less tubular designs of the time. The M23's trapezoidal front bulkhead and suspension geometry helped the team achieve a lower ride height and wider track width without the cost of excessive travel - improving grip in the corners.

Rather than suffer the weight penalty of having the main

**NOW  
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No. 76

## THE McLAREN M23

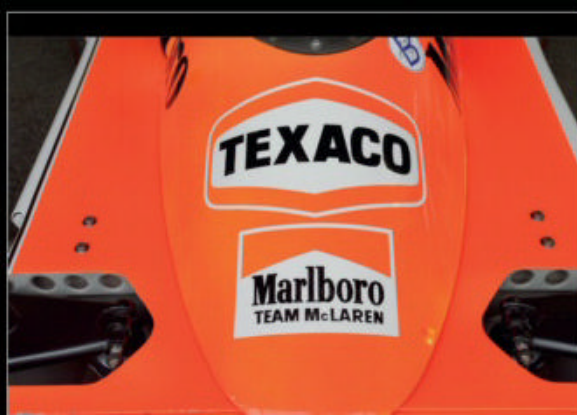
radiator in the front, Coppuck positioned these in a pair of sidepods ahead of the rear wheels, also ensuring a low frontal area. At the rear, the lower rear wishbones were reversed to reduce flex in the uprights, while the brakes were moved inboard to slash the unsprung mass of the car - improving the handling even further.

The switch to the M23 seemed to pay off immediately, as Denny Hulme - a friend of the late Bruce McLaren - fired his way into pole position first time out in the South African Grand Prix, but in race trim team-mate Peter Revson slotted into second with the out-going M19C, outperforming Hulme - who finished fifth.

Eventually the M23 proved its worth. At Anderstorp, Hulme passed Ronnie Peterson on the penultimate lap to snatch victory from the Lotus driver at his home race, before Revson then took his first victory two races later at Silverstone. Proving to be reliable straight out of the box, the M23 didn't suffer any mechanical issues until its eighth appearance when Hulme's Cosworth engine gave up at Zandvoort.

Revson clinched one more win before the season was out in the chaotic Canadian Grand Prix at Mosport, but the American was replaced by 1972 world champion Emerson Fittipaldi for 1974. Fittipaldi's head was turned by the promise of the M23, having struggled somewhat with the E-spec Lotus 72 and losing the '73 title to Jackie Stewart. Based on his Lotus experiences, Fittipaldi asked for a longer wheelbase and track width to improve the weight distribution.

For 1974, the car turned out for the first time in Marlboro colours, and McLaren enjoyed a winning start as Hulme took victory in the season opener in Argentina before Fittipaldi





enjoyed the spoils in his home race at Interlagos. That year the biggest threat came from a reinvigorated Ferrari as the returning Clay Regazzoni brought Niki Lauda with him from the ailing BRM team – both immediately factoring in the hunt for the championship. Fittipaldi narrowly beat Regazzoni having gone into the final race at Watkins Glen equal on points, taking his second F1 title.

To keep the M23 fresh for 1975, the sidepods were extended rearwards at select races to improve the aerodynamics, and the car was kitted out with Hewland's new six-speed gearbox. At the end of the previous season, Hulme – rocked by his friend Revson's untimely death earlier in the previous year – called time on his F1 career and was replaced by Jochen Mass.

Fittipaldi's attempts to defend his championship kicked off strongly with a victory in Buenos Aires. However, the M23 stood little chance against the new Ferrari 312T, with the flat-12 engine and transverse gearbox that offered excellent power and weight distribution. Lauda stormed to five wins, while Fittipaldi managed just one – at Silverstone. Mass also claimed the only win of his career in the tragically abortive race at Montjuic Park.

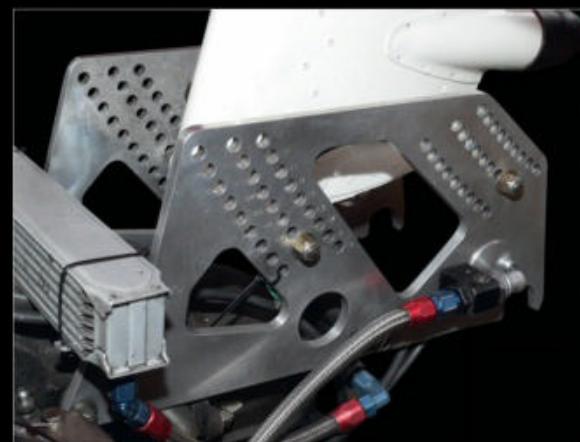
Having been a brilliant resource to develop the car around, Fittipaldi left McLaren in a bind by departing the team to join his brother Wilson's Copersucar operation. No other top-line drivers were available but the problem resolved itself as the happy-go-lucky Hesketh team ran out of funds, leaving James Hunt a free agent for '76.

Although McLaren tightened up the aerodynamics before the season began (and again in-season, fitting twin intakes

either side of the rollhoop in response to the ban on high airboxes) it looked to be a repeat of the previous year. Lauda began the season in powerful form with two wins from the first three races.

Hunt hit back, grabbing victory in the fourth round of the season, but Lauda swept to the next two races – putting everything beyond what should have been all reasonable doubt. The Brit won from pole in France as Lauda's flat-12 went pop, before a controversial disqualification after taking the chequered flag at Brands Hatch put Hunt on the back foot once more. Lauda's horrific accident at the Nürburgring left him out of action with severe burns, before his miraculous return to the grid two races later – still two points clear of Hunt. Hunt and Lauda went toe-to-toe until the Fuji season finale, when

“PROVING TO BE RELIABLE STRAIGHT OUT OF THE BOX, THE M23 DIDN'T SUFFER ANY MECHANICAL ISSUES UNTIL ITS EIGHTH APPEARANCE”



#### RACE RECORD

**Starts** 165  
**Wins** 16  
**Poles** 14  
**Fastest laps** 10  
**Other podiums** 22  
**Points** 319

#### SPECIFICATION

**Chassis** aluminium monocoque  
**Suspension** double wishbone, spring/dampers with anti-roll bars (front), reversed lower wishbones, twin radius arms (rear)  
**Engine** Ford Cosworth DFV 90-degree V8  
**Engine capacity** 2993cc  
**Power** 465bhp @ 10,500rpm  
**Gearbox** five/six-speed Hewland manual gearbox  
**Tyres** Goodyear  
**Weight** 575kg  
**Notable drivers** Emerson Fittipaldi, James Hunt, Jochen Mass, Peter Revson, Denny Hulme

Lauda quit the race in torrential conditions and Hunt did just enough to win the title.

The M23 carried on into 1977 as its successor, the M26, proved troublesome. Privateers kept the M23 fire burning into 1978 but eventually, after two drivers' titles and one constructors' championship, the M23 was put out to pasture. ►

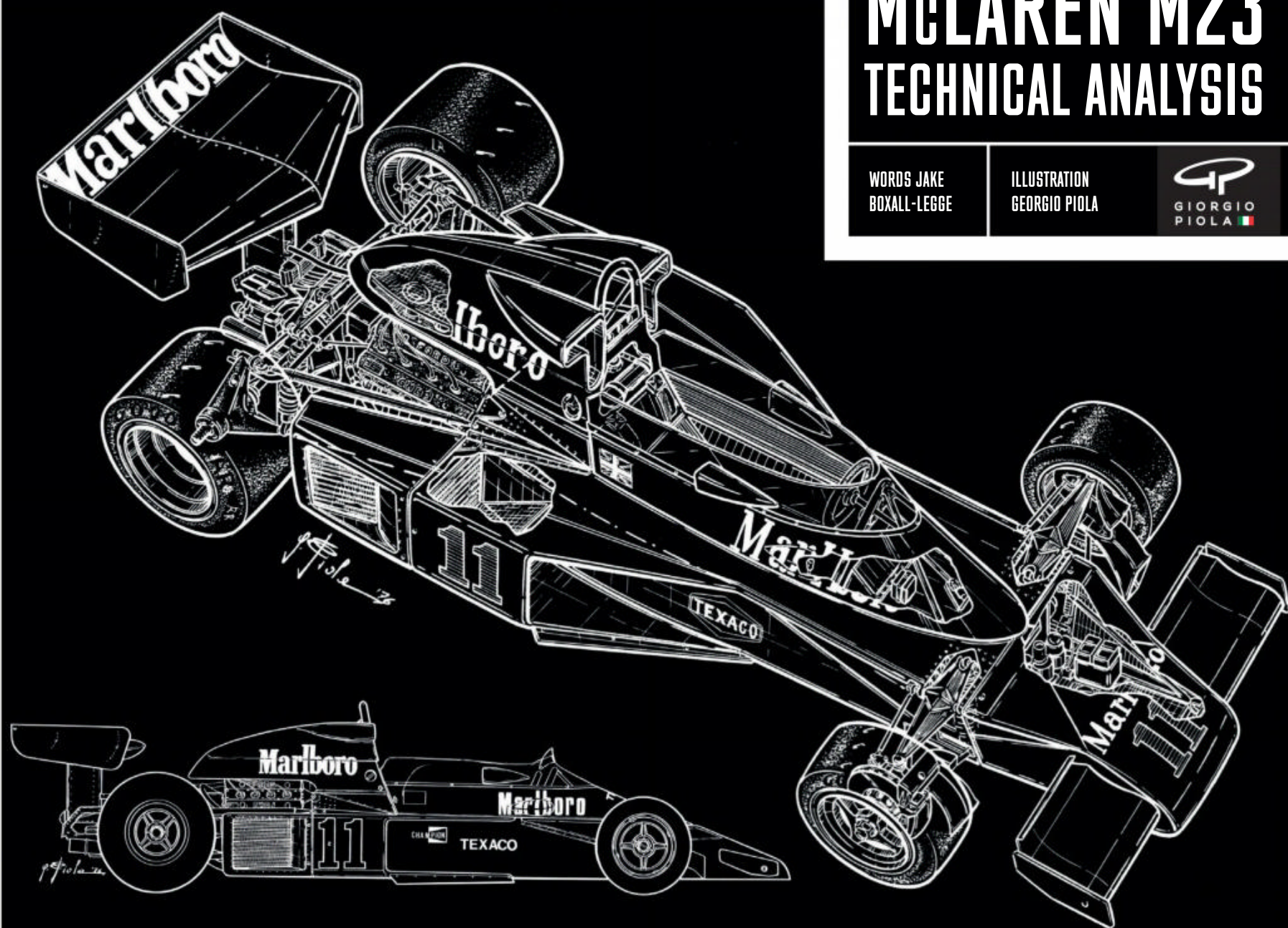




# McLAREN M23 TECHNICAL ANALYSIS

WORDS JAKE  
BOXALL-LEGGE

ILLUSTRATION  
GEORGIO PIOLA



## CONCEPT

Designed by Gordon Coppuck, the M23 traces its lineage from McLaren's Indycar program rather than the previous M19 family designed by Ralph Bellamy. A solid enough car, the M19A (and its C-spec counterpart from early 1973) was the awkward crossover between the lozenge-shaped cars of the 60s and the wedge-profiled concepts of the 70s.

Bulbous sidepods and a circular shape made the centre of gravity quite high, so the cars of the time would roll quite noticeably. The Lotus 72 underlined the benefits of a low, wedge-shaped chassis, something that Coppuck followed with his M16 Indycar.

When Bellamy departed the team for Brabham, Coppuck set to work on using the M16 as a base for McLaren's next F1 car.

## INNOVATION

Arguably the M23 didn't explicitly innovate, though it was a well-resolved product of its

time. But at the rear of the car, where the componentry is exposed (as was fashionable at the time), there are plenty of curiosities on show. The lower wishbone is in reverse, and in combination with the support frame members and coil springs, it achieved a great blend of rigidity and compliance – delivering consistent traction.

The rear brake assembly was located inboard, thus reducing the unsprung mass. The M23 was, without doubt, a nimble car for the time, and the reduced inertia of the wheel assembly with the inboard brakes helped that immensely.


However, the biggest bugbear of this concept is cooling, especially when positioned right next to the engine, so it's not a philosophy that has stood the test of time in Formula 1.

The twin brake ducts at the front were also important, one cooling the calliper and the other cooling the disc.

## EVOLUTION

The M23's fuel tank was situated just behind the driver, having been either side of the driver in the M19 – hence that car's bulbous sides. Packaging the fuel tank behind the driver, as low down as possible, became *de rigueur*.

McLaren employed a number of different aerodynamic treatments on the M23 for different circuits, such as using a thinner nose for Monaco to extract more downforce from the front wings. On occasion, the odd Gurney flap appeared on the wings to snatch a little extra downforce – a technique still used in contemporary F1.

At the front of the sidepods, McLaren would add a small skirt from time to time, helping to prevent airflow coming off the tyres from going under the floor. Today's complex bargeboards represent a better researched and more technologically optimised development of this thinking... 





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# NIGEL ROEBUCK'S FORMULA ONE HEROES

## MIKA HÄKKINEN

IT IS A  
CURIOSITY  
OF OUR  
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that some great drivers are unaccountably undervalued by history. For all his achievements, Jack Brabham, I think, is one such, and another is Mika Häkkinen, until Fernando Alonso came along the only man to worry Michael Schumacher.

After winning the British F3 championship, Häkkinen came into Formula 1 in 1991 with Lotus, and although the team was a shadow of the one founded by Colin Chapman, he showed well enough to be offered a McLaren job for '93. With Michael Andretti coming in to partner Ayrton Senna, Mika was taken on as test driver, with a promise from Ron Dennis that ultimately he would be in the race team. This materialised rather sooner than expected, for Andretti's foray into F1 was not a success, and after Monza he was replaced by Häkkinen.

Back in the day, of course, testing was a ceaseless activity, and Andretti's reluctance to spend a second longer than necessary in Europe, together with Senna's lack of interest in what – with its 'customer' Ford V8 engine – was by McLaren standards a middling car, played very much into Mika's hands. Day after day he pounded round Silverstone, and by the time of his first race with McLaren, at Estoril, he was ready, and then some. To the astonishment of one and all, not least Senna, he qualified third, one place ahead of The Great One.

"Senna was never threatened by Andretti – that was why he was so helpful to him!" said Jo Ramirez. "Mika, though, was a different matter, and in Portugal, for the first time that year, suddenly Ayrton took a great interest in his team-mate's traces."

Applying calm Finnish logic, Häkkinen, though, saw nothing remarkable about it. "With all my testing, I did ten times more actual driving than Senna that year – I mean, I reversed more than he went forward!"

Fine, but still the fact remained that Senna, even when partnered by Prost, was rarely out-qualified in equal cars.

Mika didn't think in those terms. "I was not amazed, no – we all drink water and eat bread, you know. At the end of the day it's just four wheels and steering. I was making up the time into the first corner – and he didn't know why."

Smarting, Senna resolved to put this upstart in his place, which he did with a muscular move on the opening lap: "If maybe I woke



Early days in 1991: testing for Lotus (above), with Michael Schumacher in Portugal (below left) and throwing the 102B around Monaco (below right)



Ayrton up that weekend, he woke me up, too!"

Mika was ever his own man, and while I never heard him raise his voice, he did not deal in platitudes. Years later, when we talked about this period, he was to the point: "It's a fragile subject for me, because Ayrton is not with us any more. I don't really want to explain what I experienced with him, because it was such a personal thing, but... just let's say that, for me, he was not the nicest guy in the paddock..."

For '94, with Senna gone to Williams, Häkkinen became McLaren's number one, but it was his ill luck that he arrived just as the team hit a fallow period, wasting time with the Peugeot engine before settling with Mercedes. While others – some with a sliver of his talent – racked up the victories, it was not until the end of '97, at Jerez, that Mika finally won a grand prix.

One always had the impression that once he began winning, Häkkinen would be near unstoppable, and so it proved. In 1998 he became world champion, and the following year did it again.

Mika was, mark you, mighty fortunate still to be around to realise his life's ambition, following a catastrophic qualifying accident at Adelaide in '95. After suffering a puncture, he hit a wall at enormous speed, and at an acute angle. In the impact, his belts stretched enough to allow his head to strike the steering-wheel,





The flying Finn, quite literally, Australia 1993



Celebrating his first podium, Japan 1993 with Senna (above) and Ron Dennis (below)



Spa 2000, the scene of that move on Schumi and one of his most memorable wins

and only an emergency tracheotomy had him still breathing when put in the ambulance.

"I'll never forget the moment in hospital when I woke up, and saw Sid Watkins. He asked if I could understand him, and then said, 'Mika, you've been very fortunate, because you're not going to need any brain surgery'. At first, I was shocked – what brain surgery? Then I began to understand I was lucky to have survived."

Through the winter Mika convalesced, and in February '96 was strapped into a McLaren once more, for a private test session at Paul Ricard.

"I was open-minded: was I going to like it or not? If I did, then the racing would continue, but it wasn't black and white. As soon as I went out of the pits, though, everything felt too good to be true, and, best of all, it was automatic – I didn't have to think about anything. I did about 60 laps, and then said, 'OK, that's enough, let's go home...'" Remarkably, he had lapped half a second quicker than Michael Schumacher's time of the week before.

**WHEN IT CAME TO THE END OF QUALIFYING, TO FINDING SOMETHING WITHIN HIMSELF, THERE WAS NO ONE LIKE MIKA** **MARTIN BRUNDLE**


“

"It was something fantastic, unbelievable," commented a watching Alain Prost. "You can't forget a day like that."

By the time he retired, at the end of 2001, Häkkinen had won 20 times, and none of his victories was more memorable than that at Spa in 2000, where he got by Schumacher at the top of the hill into Les Combes. It was a pass that has gone into legend, not least because a lap earlier, at the same spot, Michael had given him a 200mph chop. One sensed a cold fury in Mika as he hunted Michael down, and there was a burst of cheering in the press room when Häkkinen took the lead.

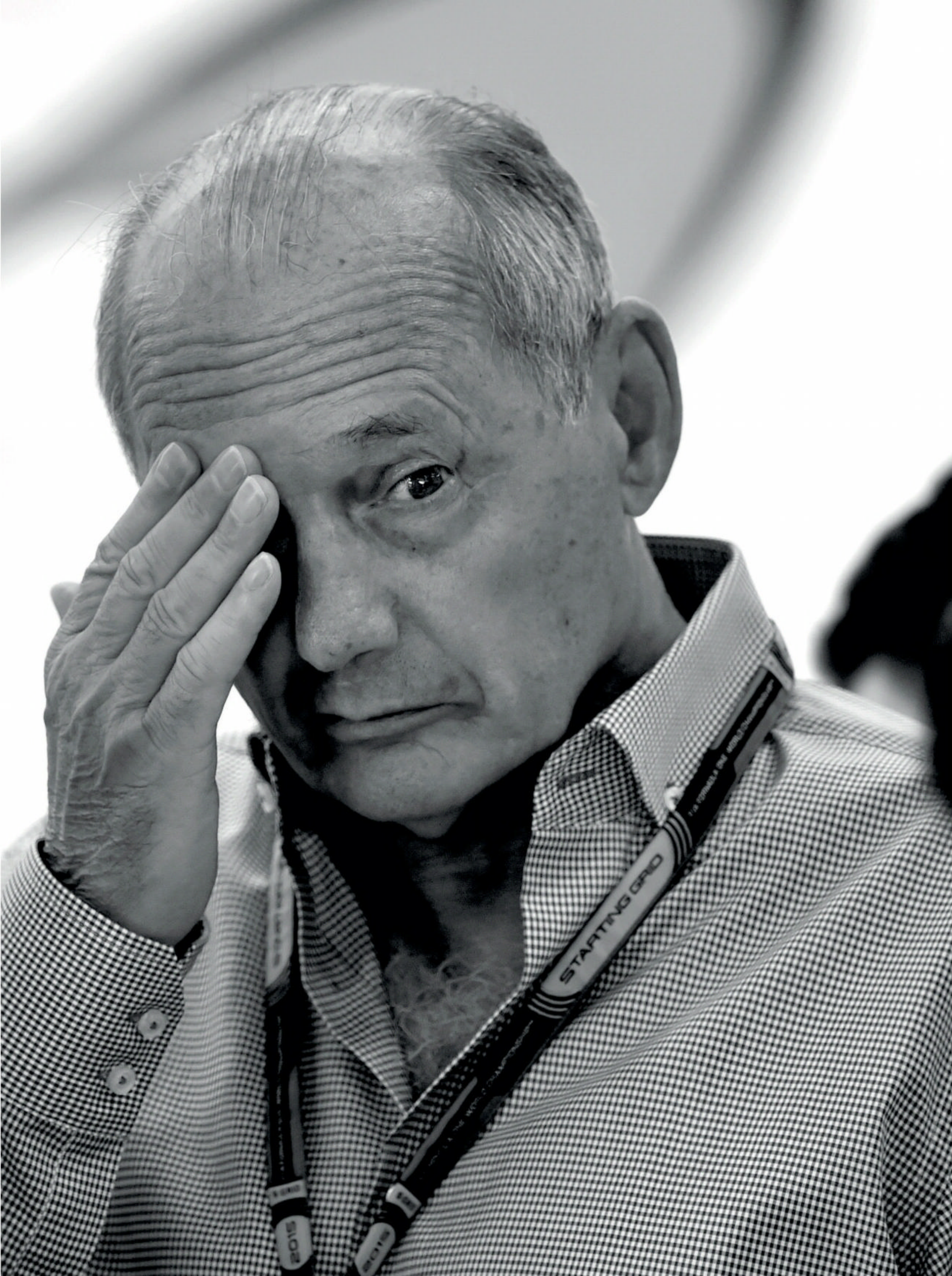
In *parc fermé* he 'had a word' with his rival, for by any standards Schumacher's move had been lethal, but at the press conference chose to play it down. "Mmmm, Michael's car was... a bit wide on that lap. It was hectic. Not a pleasant moment."

Typical Mika. Always one to keep it simple, he had conveyed his displeasure to Michael, yet declined to get into a public war of words. Resolutely apolitical, as well as blindingly quick, he remains Ron Dennis's favourite McLaren driver, uniquely never having fallen out with the boss.

"I was Schumacher's team-mate in 1993, and Häkkinen's in '94," said Martin Brundle, "and when it came to the end of qualifying, to finding something within himself, there was no one like Mika." 

”









# FALL

## THE HISTORY OF MCLAREN

# FROM

### CHAPTER 6: 2013-2019

# GRACE

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WORDS DAMIEN SMITH

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After stepping back from the F1 team to concentrate on Automotive, Ron Dennis returned with a vengeance in 2014. It didn't go too well...

McLaren's decline in Formula 1's hybrid era has been prolonged and just plain sad. A potent mixture of off-track politics and on-track failings scuppered hopes of a revival, left the team in desperate need of renewal – and facing an uncertain future...



Sergio Perez joined McLaren for 2013, but the Mexican's time at the team was not a happy one



Eric Boullier seemed like a perfect fit when he was brought in by Ron Dennis to replace Martin Whitmarsh

This is not how our celebration of the McLaren Formula 1 team's magnificent history should wrap up. But the reality is brutal. This final chapter is the first in our six-part series to feature not a single grand prix victory, never mind a tilt for a world title. It is a sorry tale of a team in decline, of monumentally wasted opportunity and the ultimate estrangement of the man who was the spark for some of the sport's greatest happenings. But does it also represent a possible ending for one of the greatest of F1 epics? This we cannot know.

Flick back 10 years and nobody could have predicted how hard McLaren's F1 fall would be. At the start of 2009, the team's mercurial young star Lewis Hamilton was riding high off the back of his first world championship. Sure, he'd needed a huge dose of Timo Glock-flavoured luck to secure it, but after all his team had been through this was vindication. McLaren had ploughed through its darkest chapter since the death of founder Bruce nearly 40 years earlier. The 2007 'Spygate' saga [involving confidential Ferrari documents], an eye-watering \$100 million fine from a vindictive governing body, further financial loss from humiliating championship disqualification and the

mental scars of Fernando Alonso's turbulent single year partnering the rookie Hamilton... Ron Dennis and his team had triumphed through it all.

Yet by 2013, the wheels had come off – and six years later they still haven't been found. Hamilton, disenchanted, left at the end of 2012, choosing to forge new partnerships with old faces at Mercedes. It would prove the best decision of his life. At McLaren, engines badged by the three-pointed star still powered its F1 cars (for now), but as mere supplier. The process of their mutual devolution was in full swing. Dennis had abdicated at the start of 2009, but still kept a grip on the wider group and formed McLaren Automotive to build ambitious road cars. To the outside world, Dennis had placed his trust in loyal lieutenant Martin Whitmarsh to take the F1 helm. The reality was increasing pressure, both internally and less directly from Max Mosley's FIA regime, had forced his hand. For the good of the team, Ron stepped aside – but to Whitmarsh's frustration and disappointment poked, prodded and undermined behind his back. It hardly helped that McLaren's knack for building great F1 cars had also slipped.

Good old Jenson Button had emerged from his three-year stint as Hamilton's team-mate with his reputation



Vodafone's departure at the end of 2013 left the team without a title sponsor for the first time in the commercial era



enhanced, and now called on all his vast experience to lead the team through a choppy 2013. He was joined by Mexican Sergio Pérez, fresh from his Sauber apprenticeship and seemingly ready to grab his chance at a top team. Except his timing was off. This was now anything but a top team. Button finished the season ninth in the points, a fourth in Brazil his best score, with Pérez down in 12th (so much for the graduation: he'd finished two places higher with Sauber in 2012).

Not only was McLaren winless for the first time since 2006, it had also failed to place a driver on a podium for the first time since the last desperate days of Teddy Mayer back in 1980. At the sharp end, Sebastian Vettel and Red Bull – to think, a team owned by some tacky energy drinks company – romped to four consecutive titles masterminded by, of all people, Adrian Newey. Once of McLaren, he was relishing a new-found freedom at a team that empowered rather than subdued him. Newey's former employers languished in fifth in the constructors' standings, 474 points adrift. Worse was to come. Following Vodafone's withdrawal at the end of 2013, 2014 was the first season in the commercial era that the team was without a title sponsor, and that remains the case.

Whitmarsh ultimately paid the price. Under his watch, McLaren had regained their composure, run by a decent, conciliatory man who the board – now dominated by the Bahrain Mumtalakat Holding Company – could trust and relate to. But in F1 only results count. Dennis took his opportunity and convinced the board that he should regain control. It helped that the wider F1 landscape had by now changed dramatically since his departure five years earlier. Under Jean Todt, the old Mosley-FIA antagonism towards McLaren (and specifically Dennis) was ancient history. It was safe for Dennis to get back in the water, but Whitmarsh deserved better.

Not that results improved. Dennis's first move had been to draft Eric Boullier in to run the team day to day. The Frenchman's reputation had blossomed during his time as the boss of Enstone-based Lotus (now Renault) and he seemed the man to call the shots in 2014, as a new era of hybrid turbo power was ushered in. That year, McLaren benefitted from the same 1.6-litre hybrid turbo thrust that catapulted Hamilton to his second world title, as Mercedes nailed the new regs to a degree that embarrassed rivals Ferrari and Renault. For Button and new team-mate Kevin Magnussen, it started well, the son of (brief) 1990s McLaren old boy Jan ▶

**“NOT ONLY WAS McLAREN WINLESS FOR THE FIRST TIME SINCE 2006, IT HAD ALSO FAILED TO PLACE A DRIVER ON THE PODIUM FOR THE FIRST TIME SINCE THE LAST DESPERATE DAYS OF TEDDY MAYER BACK IN 1980”**



“DURING THE THREE YEARS OF MCLAREN’S DISASTROUS HONDA PARTNERSHIP, THREE FIFTH PLACES WERE AS GOOD AS IT GOT. BUT IN A WAY, IT DIDN’T MATTER. HOW WE’LL REMEMBER HIM [ALONSO] WAS ENHANCED ANYWAY”

The re-marriage of Honda and McLaren was a stormy one and reliability was always an issue



heading his team leader to a two-three podium double behind Hamilton in Australia (after Daniel Ricciardo’s disqualification). But these are the only podium finishes of this chapter’s time frame. By season’s end, Button was eighth and Magnussen 11th in the points, with McLaren once again fifth in the teams’ standings.

Mick Jagger once said: “You can’t reheat a soufflé.” The truth is you can, as The Rolling Stones still strive to prove – although it rarely tastes as good. At least the Stones still have their moments when ‘Mick ’n’ Keef’ shine a light on their old alchemy; for Dennis and McLaren, they barely stoked the dimmest of glows this time around – even when reviving an engine partnership from the team’s most celebrated period.

The McLaren and Honda reunion in 2015 tapped directly into the deep well of nostalgia for the Prost and Senna era of the late 1980s. Day-glo Marlboro McLaren-Hondas were the stuff upon which legends were built, and now two great racing companies joined forces again with the ambition to create fresh history.

And to cap it all, Fernando Alonso was back in a McLaren! Not only that, he returned to a team back in the clench of Ron Dennis, the man he came to despise during those terrible final months of ’07, and had even threatened to blackmail. How had this happened?

More pertinently, why? The answer was simple: because both needed the other, particularly so in the case of Alonso. Between ’07 and ’15, the Spaniard’s career had unravelled spectacularly as his back-to-back world titles for Renault in ’05-06 receded into history. ‘Spygate’ and his conduct during its revelation haunted Alonso as much as McLaren – perhaps even more. In its aftermath, he was left to lick his wounds back at

Renault for two years during which he was implicated in another scandal, the 2008 Singapore GP ‘Crashgate’ saga. Ferrari offered the career re-boot he so severely needed in 2010, and while his warrior reputation was restored during his eventful five seasons in red, his Maranello legacy is one of aching title near-misses. By 2014, his stretched patience and divisive personality led to fractures that could not be healed. Ferrari called his bluff – and then called on Red Bull’s four-time world champion Sebastian Vettel to re-boot again for 2015. Alonso – to the minds of many the greatest, most complete F1 driver of his generation – was left high and dry. Red Bull didn’t want him. They’d heard the stories. Mercedes wouldn’t touch him either, a by-association involvement in ‘Spygate’ too raw to be forgotten. For all his brilliance, Alonso was judged to be damaged goods – or, more accurately, damaging goods.

Funny how circumstance and desperation can force past grievances to be put aside (if not truly forgiven by either Alonso or Dennis). But the sensational McLaren return would surely have wilted early without Boullier as a logical and reasonably minded buffer. Still, how Alonso lasted four years second time around is remarkable in the context of his incendiary reputation. His patience was tested to new extremes.

But the great warrior almost seemed to revel in his tragedy, a Don Quixote figure tilting at windmills as he scrapped for minor points. During the three years of McLaren’s disastrous Honda partnership, three fifth places were as good as it got. But in a way, it didn’t matter. How we’ll remember him was enhanced anyway – although again he caused division. Comparing his Honda V6 to a GP2 engine over the radio at the



The sight nobody thought they would see: Alonso and Dennis back together at McLaren



Kevin Magnussen (left  
in picture with Button)  
managed one full season  
and a year as a reserve







Zak Brown is attempting to revive McLaren while Alonso, despite not racing in F1, is still a big part of the team





company's home track of Suzuka, of all places, was the final straw for another Alonso-manufacturer relationship. Here was another car maker that vowed 'never again'. Then again, could we really blame Alonso? The frustration, as Hamilton racked up victories and titles up ahead of him, must have been overwhelming.

Meanwhile, away from the shambles at the tracks Dennis wrestled to claw back control of his old empire. Attempts to buy out the Bahrainis floundered, while his friendship with fellow shareholder Mansour Ojeh was left in tatters by a personal falling out from which there could be no return. Ojeh and the Bahraini shareholders pushed back – and then some. Towards the end of 2016, as the Honda partnership trickled to a sorry end, Dennis found himself on gardening leave. By the summer of 2017 he'd resigned completely, cutting his ties with McLaren and ending a once-unbreakable association in a manner that was just plain sad. He'd lost – and the downfall was Shakespearean in its scope and bitterness.


In his place, an ambitious American marketeer arrived to revive past glories, consciously distancing the company from Dennis-era McLaren: MCL replaced MP4, papaya orange liveries returned, McLaren went back to the Indianapolis 500...

Zak Brown isn't just trying to create a distraction from McLaren's lost F1 mojo. The team is functioning in a changing world where old F1 certainties on its superiority no longer ring true. Brown, a failed racing driver and self-made success as a sponsor hunter-

gatherer, has even threatened an F1 withdrawal, unless F1's owners addresses the financial and commercial inequalities embedded by Bernie Ecclestone and Mosley.

And as blasphemous as it might seem for a team second only to Ferrari in terms of success, you could argue McLaren no longer needs F1, even if the company was hewn directly from its coalface. The automotive arm conceived by Dennis thrives in a manner that threatens to become his most significant and lasting legacy from the near-40 years he chiselled away at McLaren in F1. In his wake, the company is producing a range of road cars that increasingly astound. In the real world if not in F1, McLaren is now a match for Ferrari – if not superior to the Italian powerhouse. And that is remarkable.

Further expansion into technology and expertise beyond motorsport strengthens McLaren's lustre as a great British success story (funded inevitably by foreign investment). So, as we bring this epic tale to a close, we wonder: are there new and exciting chapters still to be written for McLaren's intrepid grand prix adventure? Or is the team on the brink of what was once inconceivable? Could the end really be in sight for one of the greatest F1 stories ever told? If it isn't, the comeback that is so desperately required must be of a grade that would surpass the many accomplishments of the past 55 years.

"Life is measured in terms of achievement, not in years alone," said Bruce all those years ago. His company has exceeded his wildest dreams, on both counts. But Lord knows what he would have made of it all. 

**Signs of recovery? Rookie Lando Norris scored his first points for the team in Bahrain this season**

**"AS BLASPHEMOUS AS IT MIGHT SEEM FOR A TEAM SECOND ONLY TO FERRARI IN TERMS OF SUCCESS, YOU COULD ARGUE McLAREN NO LONGER NEEDS F1, EVEN IF THE COMPANY WAS HEWN DIRECTLY FROM ITS COALFACE"**



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If three tyre compounds are taken to every GP, why not insist that all three should be used during a race?

### Pushing for more

As an F1 fan for several decades, I wholeheartedly welcome the efforts of Ross Brawn and others to 'spice up the show'. I do, however, feel that there is some very low-hanging fruit which the F1 powers-that-be have yet to pluck from the tree.

Pirelli already brings all three compounds of tyre to every GP. So why not make use of all three compounds during the race mandatory? Allow each team an extra set of tyres, and this could be introduced as early as Barcelona.

The points system needs to reflect far greater reliability and the high proportion of cars that are now finishing races. The old 9-6-4-3-2-1 system was all very well, but in those days that probably covered the majority of cars that made it to

the end. How about points for every car that sees the chequered flag? And if that means all 20 cars then so be it. If nothing else it would put an end to the situation we had a few years ago where, at the end of the season, ninth place in the constructors' championship was determined by who managed a 13th place at Monza or whatever, as two teams were stuck on zero.

Looking to Indycars, isn't having an LED panel on the engine cover showing race position a no-brainer? Likewise, 360 degree cameras on top of all cars is something that F1 should already be doing.

Having said all that, I am delighted the new season is up and running. It's been a long winter.

**Chris Dodge**

*By email*

### Change the track

We're off for another season and while I always look forward to the Australian GP – and indeed I enjoyed the race – this is one track that needs changes to the layout.

Melbourne is more remembered for crashes than overtakes and there are opportunities to improve the overtake points. I don't believe minor changes would be prohibitively costly so why don't they make some alterations? Being able to follow the car in front easier is no good if a car still can't pass.

**Graham Scott**

*By email*

### Time to ban DRS...

On the basis of the first two races, it looks like it is going to be an exciting season. However, there is,

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to my mind, one current issue that blights the racing and that is the influence of DRS.

All fans like overtaking but DRS makes it all seem artificial. The current model restricts moves to particular areas of the track, encourages drivers to wait until they are in said zones and makes overtakes seem easy.

Let's ban DRS, get aero regulations which allow cars to follow one another and make the drivers do the work.

**Michael Brierley**  
*Stalybridge, UK*

### ...or tweak it

I've learned to live with DRS but the way it is today means some drivers may use it repeatedly, while others not at all.

Let's get rid of DRS zones and let the drivers use it where they want... but limit the use to no more than three a race and 50 times a season. This would force them to think about it, and would serve as a tactic rather than essentially a free pass. Also, let's give the fastest lap point to any driver, not just the top 10.

**Aleš Norský**

*By email*

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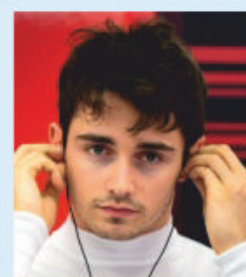
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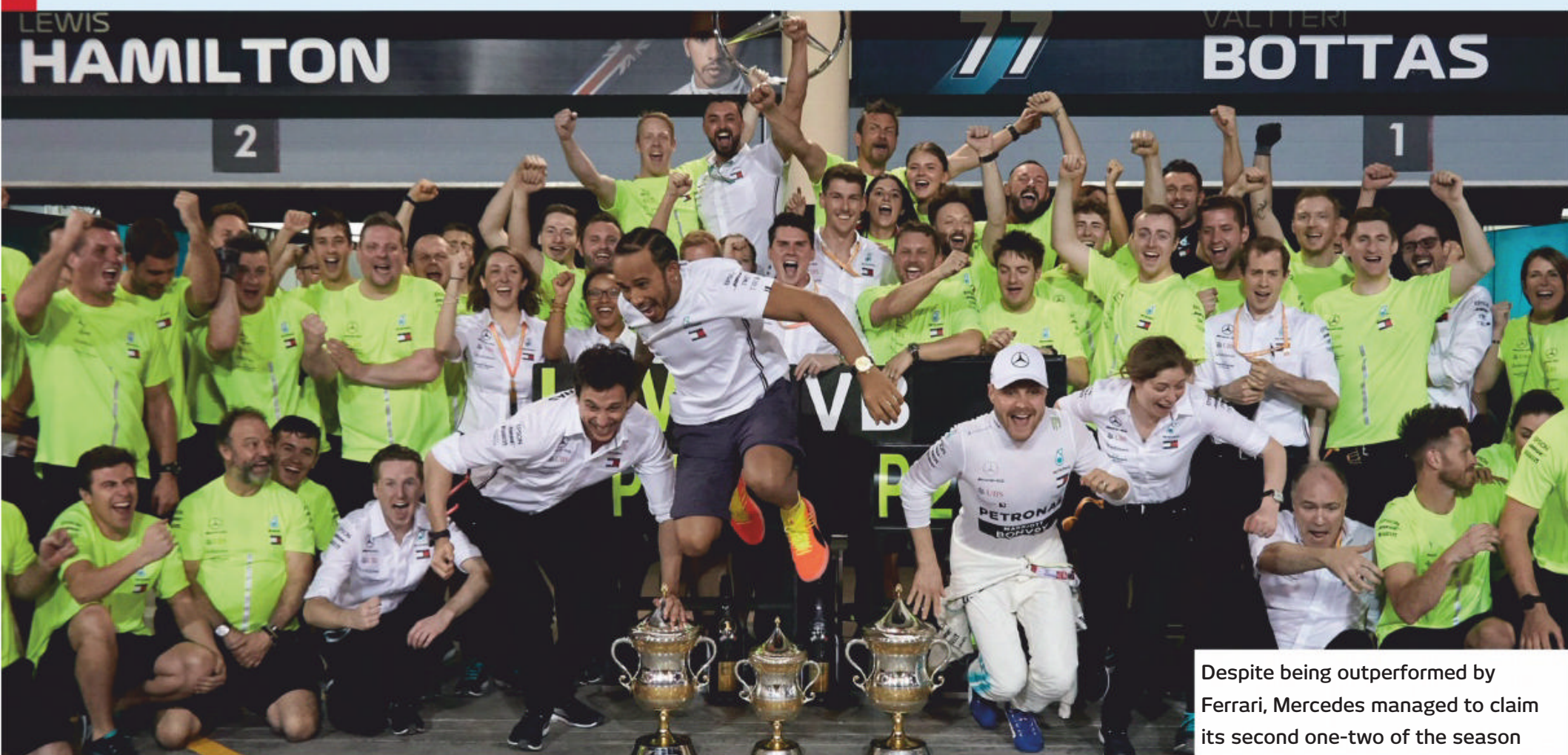




FINISHING STRAIGHT

## RACE DEBRIEF

F1 WORLD CHAMPIONSHIP ROUND 2

THE BAHRAIN GP  
IN 3 KEY MOMENTSPICTURES motorsport  
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Despite being outperformed by Ferrari, Mercedes managed to claim its second one-two of the season

## 1 Mercedes victorious despite power deficit

**Lewis Hamilton claimed the 74th victory** of his career under the floodlights in Bahrain but admitted after the race he had been "lucky" thanks to inheriting the win from Charles Leclerc's hobbled Ferrari. Twenty-five points from Bahrain is one thing, but at this stage of the season Ferrari seems to have a clear car advantage.

After impressing on Friday afternoon and locking out the front-row of the grid, the pace of Leclerc and Sebastian Vettel was more akin to the form they showed in pre-season testing, rather than the performance in the Australian season opener.

Ferrari's advantage was most obvious on the straights and Mercedes team boss Toto Wolff admitted that he had been anticipating this.

"If anything, Melbourne was a surprise and not Bahrain," he said after the race. "The power they have is unmatched and very difficult to compete with. If Ferrari's engine development was made between Melbourne and Bahrain, that's impossible for us to catch, because the engine regulations are very mature – we find only millisecond gains from one upgrade to the next."

Hamilton took the lead on lap 48 – nine from the flag – by easily passing Leclerc on the run between Turns 13 and 14 after the Ferrari's engine dropped a cylinder. Valtteri Bottas, hindered by a plastic bag lodged in his Mercedes' front wing, took second and retains his championship lead by a solitary point, thanks to taking fastest lap in Australia.

It was a tenacious drive by Hamilton, who overtook his team-mate into the fast sweeps of Turns 5 and 6 on the second lap. When Lewis made his second stop on lap 34, Ferrari's Vettel pitted a lap later to cover the Mercedes. The sight of Vettel ahead encouraged Hamilton to attack and he swept around the outside of the Ferrari into Turn 4.

"When you look at the big flag on top of the tower, there was a massive headwind into that corner, so I just gave it everything and braked later than usual and dived down the outside," said Hamilton. Caught out, Vettel spun his Ferrari and lost six places, ultimately recovering to finish fifth at the flag.

"The second stint on the soft tyre was horrible," said Hamilton. "When I fell back behind the Ferrari [after the first stop] it looked like we were out of contention. I was battling this snappy, oversteery car and it was quite tricky. We were lucky with the 1-2, but Ferrari outperformed us this weekend. We need to work hard to analyse what went wrong."

## 2 Heartbreak for Leclerc after taking first pole

**Three hours after the Bahrain GP** had finished, Charles Leclerc was still finding time to pose for photographs for the remaining few stragglers in the paddock. He could smile despite his heartbreak. It had been a brilliant weekend for the young Monaco-born racer, in only his second start for Ferrari.

Fastest in two out of three practice sessions, Leclerc carried his strong form into qualifying. He comfortably out-performed team-mate Vettel by 0.238 seconds in Q3 to take his maiden pole.

But when the five red lights went out, both Ferraris spun up their rear wheels as they launched. Vettel tamed his more effectively and was first into Turn 1. The fast-starting Bottas was also able to pass the Leclerc into Turn 4 – with Hamilton also shaping up to pass.

But as his tyre temperatures built so did Leclerc's confidence and he swept by Bottas on lap two, then began eating into Vettel's small lead. He was instructed by the team to hold station for two laps, but was confident that he was faster and launched a DRS-assisted move into Turn 1 from





Leclerc was happy after his first pole (above) but less so post-race (below)



a long way back at the beginning of the sixth lap. Tellingly, while Vettel was close enough to get DRS himself along the following straight, he aborted an attempt to repass his team-mate into Turn 4.

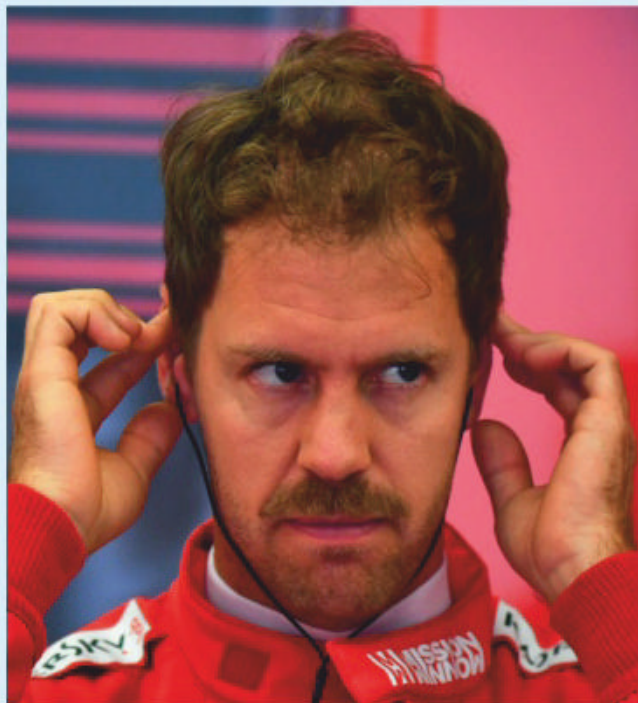
Leclerc had this race in the bag until his engine lost power in the closing stages as a “miscombustion” in one cylinder (understood to be the result of a short-circuit) triggered further shutdowns in the hybrid system. So a fairytale win went begging, although he did take his first podium finish by limping home third. A sitting duck for Max Verstappen’s Red Bull in the closing stages, Leclerc was only able to hold on to the position because the race finished under the Safety Car, after both Renaults broke down at Turn 1 on lap 54.

“I definitely won’t forget this weekend,” he said. “Today was not our day and it’s sad because I was so close to realising a dream I’ve had since childhood – but we’ll come back stronger.”

## 3 Vettel blunder costs Ferrari vital victory

It’s only been nine races since Sebastian Vettel and Lewis Hamilton last went wheel-to-wheel and it ended in calamity for Vettel at Monza last year. Worryingly the Ferrari man has made a similar mistake so early into the new season.

On the opening lap of last year’s Italian GP,



Vettel admitted that he didn’t have the pace of Leclerc in Bahrain but shrugged off his spin as having anything to do with pressure

Hamilton overtook Vettel at the second chicane, causing Vettel to spin under braking. In two other races at the end of 2018, Vettel lost control of his car in overtaking dices with both Max Verstappen (Suzuka) and Dan Ricciardo (Austin).

It’s worrying for Ferrari that the errors which derailed his world championship campaign last year are already surfacing so early in 2019 – for it should have been Vettel, not Hamilton, who inherited victory in Bahrain.

The belief was Vettel had put the troubles of last year behind him, but in Bahrain he made another mistake in on-track combat. Hamilton passed the Ferrari on the outside of Turn 4 on lap 38 and an instant later, Vettel pirouetted his car and flat-spotted his rear tyres.

As he accelerated down the back straight, the vibrations from the damaged tyres caused his front-wing to spectacularly disintegrate in a shower of sparks. This forced him to pit for new rubber and a replacement wing.

“It was nothing to do with pressure,” said Vettel. “I was fighting with Lewis and was surprised to lose the rear. It was my mistake. I need to digest that.”

Error apart, it was a lacklustre weekend for the German who admitted he needed to do some “homework” to understand why he was off the pace compared with his younger team-mate.

“I just didn’t have the pace Charles had in the race and I was struggling with the rear of the car. I was losing time everywhere.”

## RESULTS ROUND 2

SAKHIR / 31.03.19 / 57 LAPS



1st	Lewis Hamilton	Mercedes	1h 34m 21.295s
2nd	Valtteri Bottas	Mercedes	+2.980s
3rd	Charles Leclerc	Ferrari	+6.131s
4th	Max Verstappen	Red Bull	+6.408s
5th	Sebastian Vettel	Ferrari	+36.068s
6th	Lando Norris	McLaren	+45.754s
7th	Kimi Räikkönen	Alfa Romeo	+47.470s
8th	Pierre Gasly	Red Bull	+58.094s
9th	Alexander Albon	Toro Rosso	+62.697s
10th	Sergio Pérez	Racing Point	+63.696s
11th	Antonio Giovinazzi	Alfa Romeo	+64.599s
12th	Daniil Kvyat	Toro Rosso	+1 lap
13th	Kevin Magnussen	Haas	+1 lap
14th	Lance Stroll	Racing Point	+1 lap
15th	George Russell	Williams	+1 lap
16th	Robert Kubica	Williams	+2 laps
17th	Nico Hülkenberg	Renault	dnf/+4 laps - engine
17th	Daniel Ricciardo	Renault	dnf/+4 laps - MGU-K
19th	Carlos Sainz	McLaren	dnf/+4 laps - gearbox

### Retirements

Romain Grosjean Haas 16 laps - damage

### Fastest lap

Charles Leclerc: 1min 33.411s on lap 38

### TYRE COMPOUNDS USED



CLIMATE	AIR TEMP	TRACK TEMP
Clear/ windy	27°C	29°C

### DRIVERS’ STANDINGS

1 Bottas	44pts	11 Stroll	2pts
2 Hamilton	43pts	11 Albon	2pts
3 Verstappen	27pts	13 Kvyat	1pt
4 Leclerc	26pts	14 Pérez	1pt
5 Vettel	22pts	15 Giovinazzi	0pts
6 Räikkönen	10pts	16 Russell	0pts
7 Norris	8pts	17 Kubica	0pts
8 Magnussen	8pts	18 Ricciardo	0pts
9 Hülkenberg	6pts	19 Sainz	0pts
10 Gasly	4pts	-- Grosjean	0pts







FINISHING STRAIGHT

## RACE DEBRIEF

F1 WORLD CHAMPIONSHIP ROUND 3

THE CHINESE GP  
IN 3 KEY MOMENTSPICTURES  **motorsport**  
IMAGES

Albon missed qualifying but his recovery drive to tenth after starting from the pitlane was impressive

## 1 Alexander Albon's extraordinary effort

**It's not often the man** in tenth place is awarded the fan vote for 'driver of the day' but Alex Albon was a worthy recipient in Shanghai. In the closing stages the Toro Rosso driver repelled an attack from Romain Grosjean's Haas – and fully deserved his solitary point after a measured drive.

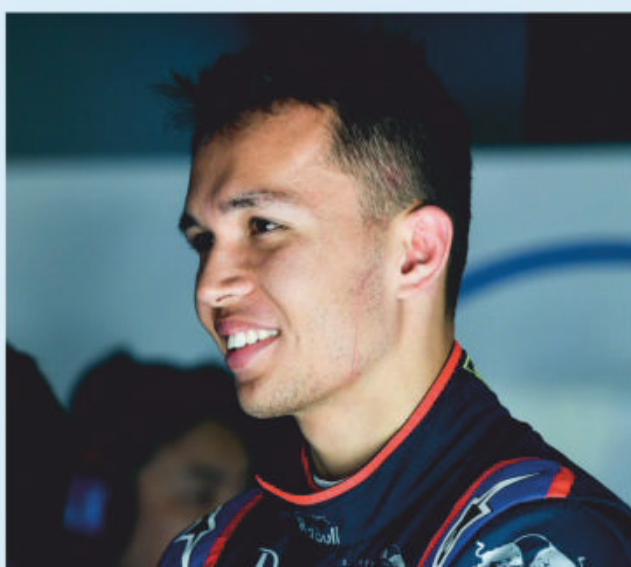
Albon had been forced to start from the pitlane after wrecking his Toro Rosso with a massive 26G crash in the final minutes of Saturday morning's final free practice session. The London-born Thai driver overcooked the final corner and after initially trying to catch his out-of-control car, ended up hitting the barriers hard. He was thankfully unharmed by the impact, but his mechanics had no chance to fix his chassis in time for qualifying.

"It didn't feel like an amazing drive through the field, although I did start last it wasn't a crazy race," said the 23-year old.

"When you're in the car, you have no idea what is going on, then I was told I was P10 and Grosjean was behind me and I needed to defend. The last few laps were a bit nerve-wracking, but I'm really happy with the result."

Albon did a great job to salvage a point from a pitlane start, taking advantage of misfortune ahead of him and making some key passes along the way, but his Toro Rosso team-mate was in the wars again.

The 'Torpedo' – aka Daniil Kvyat – managed to hit both McLarens rounding Turn 6 on the opening lap. It was a disaster for the two MCL34s of Carlos Sainz and Lando Norris, which were both forced to stack in the pits for two new front wings and sunk to the tail of the field. Kvyat was deemed to be responsible by the stewards and was awarded a drive-through penalty for his misdemeanour.



## 2 Team orders haunt Ferrari yet again

**It's a subject that Ferrari** is not going to shake off easily. The delicate issue of team orders has once again come to haunt Maranello after a direct order from the pitwall in the Chinese GP. Given Charles Leclerc's electric pace against his established team-mate Sebastian Vettel so far this season, it's a topic that could come up repeatedly.

After Lewis Hamilton claimed the lead of the race at the start, poleman Valtteri Bottas was forced to defend second place from Vettel. That block allowed Leclerc to nip inside at Turn 1 and bag third. In the early laps, both Mercedes pulled clear, while Vettel was increasingly frustrated by Leclerc's lack of pace, believing he could attack the silver cars if he was given clear air.

On lap nine, Vettel was asked by his race engineer Riccardo Adami: "How much faster can you go?" To which the reply from the cockpit came: "I'm trying to get closer."

A lap later, Leclerc received a message from his side of the garage that stated: "You need to go faster otherwise we will let Vettel past."

The order for the pair to swap positions came on





lap 11, when Leclerc pulled over in the braking zone for Turn 1. But did the decision come too late? By now, Hamilton had a lead over Vettel's Ferrari of 8.3 seconds.

"It was not an easy situation," said Leclerc, who eventually finished fifth. "I was struggling with tyres and at the start it felt like Seb was quicker, but being behind me for some laps his tyres were also damaged."

The instruction came from team boss Mattia Binotto, who revealed prior to Australia that Vettel would get preferential treatment in the early races of the season. But perhaps Ferrari hadn't expected

Leclerc to be so quickly up to speed, or as close to Vettel as he has been.

"We tried everything we could to not lose time on the Mercedes ahead and it was right to give Seb a chance," said Binotto. "It was not an easy decision. There might be another time when it's inverted."

Ferrari needs to be careful about enforcing a number one driver policy, because fans want to see team-mates battling, but the Scuderia also needs to be careful not to turn a newly harmonious environment – under the fresh guidance of Binotto – into a civil war similar to those Nico Rosberg/Hamilton days at Mercedes.

### 3 Pitstop practice pays off for Mercedes

**When in Brackley,** Mercedes boss Toto Wolff says he can regularly hear the sound of wheelguns, as his mechanics routinely undertake pitstop practice. But they don't often practice a double change, with one car stacked behind the other.

The decision, on lap 36, to bring race leader Hamilton and team-mate Bottas in on the same lap was inspired. It helped secure Hamilton's 75th grand prix win and Mercedes' third 1-2 in as many races. But with one pressurised pitlane mistake, the

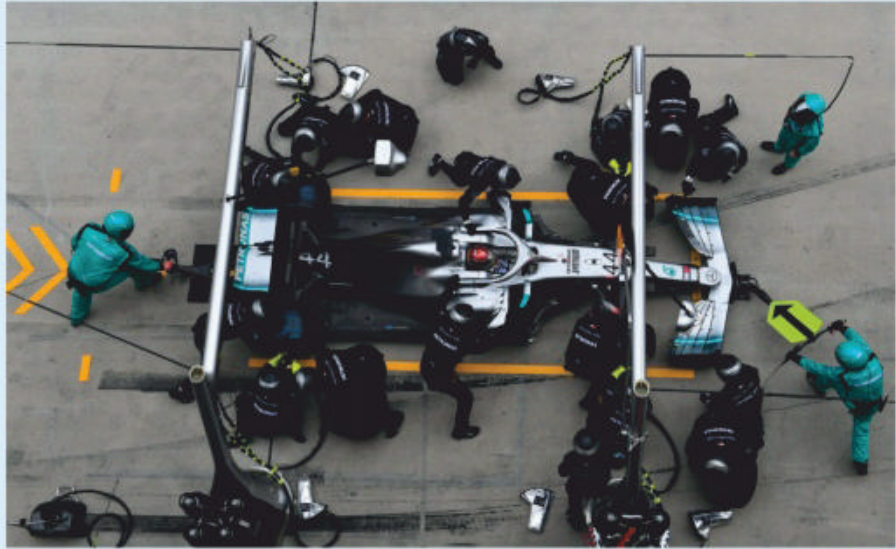
outcome could have been very different.

The lap before the pair pitted, they were separated by just 5.498 seconds. Red Bull called Max Verstappen in (from fourth) which triggered a whole host of scenarios, as Wolff explained: "Nobody was really sure whether to go for a struggling one-stop or a two-stop. When Max pitted, Ferrari needed to cover that – and we wanted to avoid the undercut from Sebastian."

"But we also wanted to make sure that both Valtteri and Lewis didn't lose out in pitting as we didn't want to interfere with the order. If we had stopped Valtteri first, then he would have undercut Lewis, so that's why we decided to stack them."

"It's an extremely tricky manoeuvre as the first line of attack needs to be out of the way for the second group to put the tyres on. But it was really impressive how the guys did it and is a result of the thousands of stops they practice."

Bottas, who lost his points lead to Hamilton, was initially unhappy at effectively being denied a chance to attack his team-mate later in the race, but eventually accepted it was the correct call.



Pitstop practice makes perfect for Mercedes, which crucially enabled the team to double-stack its cars for their second stops

PICTURES: MARK SUTTON; ANDY HONE; GLENN DUNBAR; ZAK MAUGER

## RESULTS ROUND 3

SHANGHAI / 14.04.19 / 56 LAPS



1st	Lewis Hamilton	Mercedes	1h 32m 06.350s
2nd	Valtteri Bottas	Mercedes	+6.552s
3rd	Sebastian Vettel	Ferrari	+13.744s
4th	Max Verstappen	Red Bull	+27.627s
5th	Charles Leclerc	Ferrari	+31.276s
6th	Pierre Gasly	Red Bull	+89.307s
7th	Daniel Ricciardo	Renault	+1 lap
8th	Sergio Pérez	Racing Point	+1 lap
9th	Kimi Räikkönen	Alfa Romeo	+1 lap
10th	Alexander Albon	Toro Rosso	+1 lap
11th	Romain Grosjean	Haas	+1 lap
12th	Lance Stroll	Racing Point	+1 lap
13th	Kevin Magnussen	Haas	+1 lap
14th	Carlos Sainz	McLaren	+1 lap
15th	Antonio Giovinazzi	Alfa Romeo	+1 lap
16th	George Russell	Williams	+2 laps
17th	Robert Kubica	Williams	+2 laps
18th	Lando Norris	McLaren	dnf/+4 laps - damage

Retirements		
Daniil Kvyat	Toro Rosso	41 laps - engine
Nico Hülkenberg	Renault	16 laps - MGU-K

**Fastest lap**  
Pierre Gasly: 1min 34.742s on lap 55

**TYRE COMPOUNDS USED**



Hard (C2)    Medium(C3)Soft (C4)    Inter    Wet

CLIMATE	AIR TEMP	TRACK TEMP
Hazy	19°C	26°C

DRIVERS' STANDINGS

1	Hamilton	68pts	11	Ricciardo	6pts
2	Bottas	62pts	12	Pérez	5pts
3	Verstappen	39pts	13	Albon	3pts
4	Vettel	37pts	14	Stroll	2pts
5	Leclerc	36pts	15	Kvyat	1pt
6	Gasly	13pts	16	Giovinazzi	0pts
7	Räikkönen	12pts	17	Grosjean	0pts
8	Norris	8pts	18	Sainz	0pts
9	Magnussen	8pts	19	Russell	0pts
10	Hülkenberg	6pts	20	Kubica	0pts







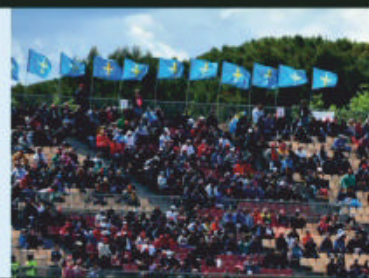
FINISHING STRAIGHT

# RACE PREVIEW

F1 WORLD CHAMPIONSHIP ROUND 5

# SPANISH GP

10-12 May 2019  
Barcelona



PICTURES: ZAK MAUGER; MARK SUTTON. ILLUSTRATION: ALAN ELDRIIDGE



## RACE DATA

**Circuit name** Circuit de Barcelona-Catalunya  
**First grand prix** 1991  
**Number of laps** 66  
**Circuit length** 2.892 miles  
**Race distance** 190.825 miles  
**Longest straight** 0.81 miles  
**Elevation change** 87.9 feet  
**Lap record** 1m 18.441s, Daniel Ricciardo (2018)  
**F1 races held** 28  
**Winners from pole** 21  
**Pirelli tyre compounds** C1, C2, C3

## CAR PERFORMANCE

**Downforce level** High  
**Cooling requirement** Medium  
**Fuel consumption** 1.53kg/lap  
**Full throttle** 64.4%  
**Top speed** 188mph  
**Average speed** 122mph

## TIMETABLE (UK TIME)

**Friday** 10 May  
**Practice 1** 10:00-11:30  
**Practice 2** 14:00-15:30  
**Saturday** 11 May  
**Practice 3** 11:00-12:00  
**Qualifying** 14:00-15:00  
**Sunday** 12 May  
**Race** 14:10  
**Live coverage** Sky Sports F1  
**Highlights** Channel 4

## THE MAIN EVENT

**After four flyaway races** the season heads to the outskirts of the Spanish city of Barcelona, a popular venue for drivers and teams alike. It will be F1's third visit to the Circuit de Barcelona-Catalunya this year, following the two pre-season tests held here back in February.

The 2.9-mile track is a favoured testing venue owing to its good mix of fast, medium and slow-speed corners and a long start-finish straight. That combination tests a broad range of car characteristics, but the downside of Barcelona's ubiquity as a testing venue is that teams arrive better prepared than they do for most other grands prix. That generally means fewer mistakes to upset the order.

Barcelona's relative accessibility compared with preceding races means this is usually a race where teams bring their first major upgrades of the season – so keep an eye on all of the cars.

## 2018 RACE RECAP

Lewis Hamilton was on imperious form as he crushed the opposition, finishing over 20 seconds ahead of his team-mate Valtteri Bottas and another six in front of third-placed Max Verstappen, as Ferrari struggled on Pirelli's special low-guage tyres

The main drama came at Turn 3 on the opening lap when Romain Grosjean (Haas) spun, eliminating the hapless Nico Hülkenberg in his Renault and Toro Rosso's Pierre Gasly.

**KEY CORNER: TURN 9** This is a corner for the brave owing to a blind turn-in taken at 153mph in sixth gear, just before the second DRS zone on the lap



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2018  
Lewis  
Hamilton  
Mercedes



2017  
Lewis  
Hamilton  
Mercedes



2016  
Max  
Verstappen  
Red Bull



2015  
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Rosberg  
Mercedes



2014  
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Hamilton  
Mercedes





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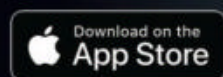
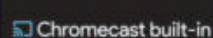
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FINISHING STRAIGHT

## RACE PREVIEW

F1 WORLD CHAMPIONSHIP ROUND 6

## MONACO GP

23-26 May 2019  
Monte Carlo

PICTURES: JERRY ANDRE; MANUEL GORIA. ILLUSTRATION: ALAN ELDRIDGE



## THE MAIN EVENT

**Incongruous even when it** began in 1929, this blast around the streets of the Principality is unlike any other grand prix. Its place on the calendar is assured – but for a handful of years in the mid 1950s it has been a mainstay since the championship began – and its glamorous allure is undoubted.

From a racing perspective, the race length and number of laps is an anomaly in comparison with the other 20 circuits on the calendar. As a result of its tight, twisty layout the average lap speeds at Monte Carlo are lower, so the race distance is about 30 miles shorter than the official regulation length. That's to ensure the race is completed within the two-hour timeframe, but spectators can see cars more frequently than anywhere else.

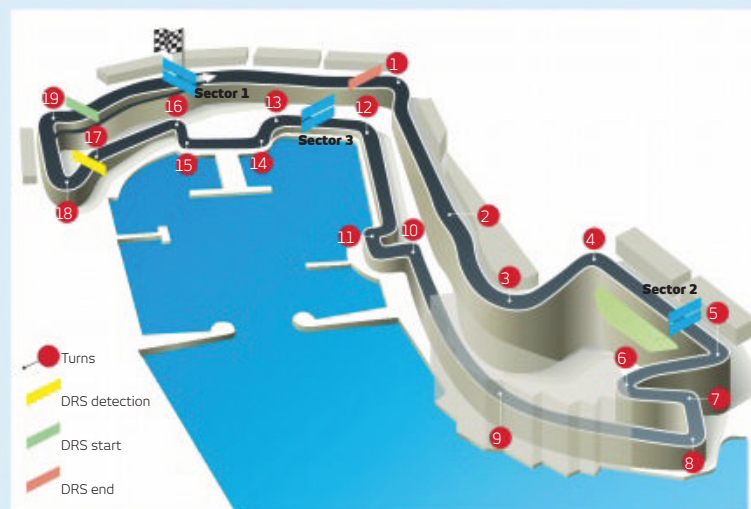
Drivers love the challenge of Monaco, where the margin between success and failure is miniscule. Thanks to the unforgiving barriers, just the smallest of errors can have disastrous consequences.

## 2018 RACE RECAP

It was redemption for Daniel Ricciardo, who finally won on the streets of Monte Carlo after his dejection of losing in 2016 following a pitstop snafu. There was only one Red Bull in contention for pole position after his teammate Max Verstappen crashed in the final moments of Saturday's final practice session – and he was forced to start last. Ricciardo led from pole, but it seemed as if luck was once again not on his side. An MGU-K electrical

failure hobbled his Red Bull from as early as lap 18, but he battled on for a memorable victory.

**KEY CORNER: TURN 1** Taken at 71mph in third gear, the tricky opening corner on the lap, Ste Dévote, requires millimetre precision before the run up the hill



## RACE DATA

## Circuit name

Circuit de Monaco

## First GP 1950

## Number of laps 78

## Circuit length 2.073 miles

## Longest straight 0.2 mile

## Elevation change 137.7 feet

## Race distance 161.733 miles

## Lap record 1m 14.260

Max Verstappen (2018)

## F1 races held 65

## Winners from pole 29

## Pirelli compounds

C3, C4, C5

## CAR PERFORMANCE

## Downforce level High

## Cooling requirement

Maximum

## Fuel consumption 1.069kg/lap

## Full throttle 52%

## Top speed 177mph

## Average speed 98mph

## TIMETABLE

## (UK TIME)

## Thursday 23 May

## Practice 1 10:00-11:30

## Practice 2 14:00-15:30

## Saturday 25 May

## Practice 3 11:00-12:00

## Qualifying 14:00-15:00

## Sunday 26 May

## Race 14:10

## Live coverage Sky Sports F1

## Highlights Channel 4

## THE LAST FIVE WINNERS HERE...



2018

Daniel  
Ricciardo  
Red Bull

2017

Sebastian  
Vettel  
Ferrari

2016

Lewis  
Hamilton  
Mercedes

2015

Nico  
Rosberg  
Mercedes

2014

Nico  
Rosberg  
Mercedes





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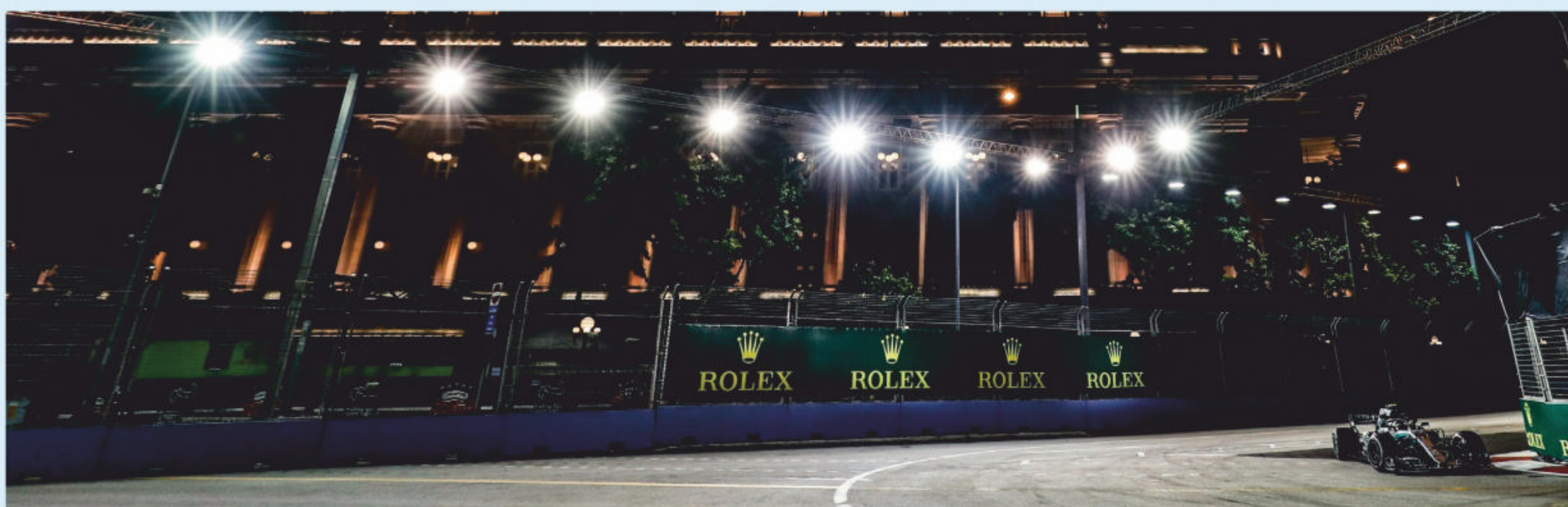


FINISHING STRAIGHT

TRAVEL



Singapore held the first F1 night race and is a spectacular venue for a GP



PICTURES: ZAK MAUGER; ANDY HONE; OTHER IMAGES: SHUTTERSTOCK

# VISIT THE SINGAPORE GRAND PRIX

SINGAPORE, 20-22 SEPTEMBER, 2019

PICTURES motorsport  
IMAGES

## YOUR GUIDE TO SINGAPORE

The Marina Bay Circuit, located close to the island's southern tip, has hosted the Singapore Grand Prix since Formula 1 held its first night race in the Asian city state in 2008 – and it's one of the most popular races on the calendar.

Since becoming a sovereign nation in 1965, Singapore has grown into one of the world's most developed countries, ranking high in everything from economic strength and healthcare to technological advancement and education.

The densely populated city state has always placed great emphasis on maintaining its precious green spaces; 10% of the island's

land is reserved for parks, gardens and nature reserves. The garden city project has given rise to incredible new developments such as the Gardens by the Bay and the conservation of historical sites such as the Singapore Botanical Gardens.

Opened in 2012, the Gardens by the Bay is a huge space situated on reclaimed land near the Marina location of the grand prix, east of the city's downtown core. Home to an incredible array of themed gardens, the 250-acre complex is the site of one of Singapore's most iconic spectacles, the Supertree Grove. The Supertrees are man-made tree-shaped sculptures that range from 25 to 50 metres tall and house much of

the technology that keeps the gardens healthy, whether that's cooling or ventilating the huge on-site greenhouses or collecting rainwater to irrigate the gardens. Each one is a vertical garden of its own and themed with different flora. This genuine must-see is open daily.

Around 25 minutes northwest of the Gardens by the Bay, you'll find the Singapore Botanical Gardens. This UNESCO World Heritage Site is over 100 years old, older than the country it sits in and is adorned with lakes, lawns and gardens, perfect for a lazy wander. The gardens are a great place to slow things down, and the primeval rainforest in particular stands in complete





in association with



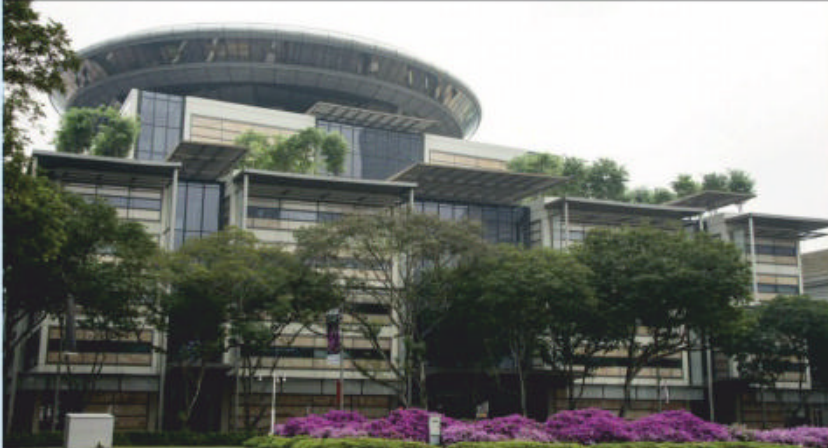
Supertrees are man-made structures in the Gardens by the Bay



Singapore's Botanical Gardens are a great place to unwind



The National Gallery is situated in the Old Supreme Court



## FAST FACTS

**Flight time** 13hrs from London  
**Currency:** Singapore dollar  
**Time zone:** GMT+8  
**Temperature:** 31C (average high)

juxtaposition to the bustling city. Head to the National Orchid Garden to see a mesmerising array of the city state's symbolic flower.

Singapore is home to an amalgamation of cultural influences. Its status as a global hub means variety and fusion food is high on the menu. Chinese and Malay dishes combine with Indian and Indonesian cuisine as well as western influences from Portugal and the UK, to create a truly diverse eating experience. Must-haves include a Peranakan menu, drawing on Chinese and Malay influences, where you'll be treated to curry and belacan-style dishes. Kristang cuisine focuses on Portuguese, Dutch and British flavours

combined with Chinese and Indian heritage – perfect for lovers of stews, pork and seafood.

Since the early 1990s the city's cultural sites have received huge investment from the country's leaders. The National Gallery, housed in Singapore's City Hall and Old Supreme Court buildings, and the Asian Civilisations Museum are a must for history and art buffs looking for an insight into the region's rich past.

For those looking for some high culture then head to the Esplanade Theatres. The theatres play host to a full calendar of events, including around a hundred shows a year by the world-famous Singapore Symphony Orchestra.



## ASK THE EXPERT THE THOMAS COOK SPORT REP'S VIEW

### What's your favourite memory from the race?

I was lucky enough to witness the first-corner incident between Ferrari team-mates Sebastian Vettel and Kimi Räikkönen in 2017. You never want to see drivers crashing out, but the drama was intense and it was great to see Lewis Hamilton cruise home.

### And the best thing to do away from the track?

Head to the Padang stage for the 2019 headlining entertainment acts, which include Swedish House Mafia, Red Hot Chilli Peppers, Cardi B and Fatboy Slim. There is a fanzone which will get you really close to the stage, but beware though, it is first-come, first-served for entry here. There are also other stellar performers like Toots and the Maytals, Hans Zimmer, Texas and many more playing on several other stages throughout the Circuit Park, providing 100 hours of pure entertainment.

### Any local food or drink to recommend?

There's a pork broth-style dish I had a few times while in Singapore. Ask for Bak Kut Teh – it's probably one of the most famous local dishes.

### Your top tip for this race and destination?

Singapore's gardens are incredible. It's easy to get caught up in the bustle of the city but take the time to head to the parks and reserves. They're huge, beautiful and mostly free.

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# F1 UPGRADES

Enhance the F1 experience with the latest must-have products

## FORMULA 1 1000TH RACE POSTER

**Price** £28 & £92 (plus delivery)

[automobilist.com](http://automobilist.com)

To celebrate the 1,000th world championship Formula 1 race – last month's Chinese Grand Prix – two bespoke race posters have been commissioned by Formula 1 and they are now available to purchase.

The two designs have been created by Automobilist, a team of artists and designers who specialise in automotive art. The first poster of

the set of two has been produced with 3D rendering techniques and is set in white with embossed gold foil. Each piece of this limited-edition print run has been individually numbered ranging from 1 to 1,000 – and priced at £92.

The second of the set, in red and yellow (the colours of the Chinese flag) is priced at £28 and is sized at the same standard 50cm x 70cm. Both list the 107 drivers to have won a grand prix between 1950 and the start of 2019.



## RAPID RESPONSE

**Author** Dr Stephen Olvey

**Price** £25

[evropublishing.com](http://evropublishing.com)

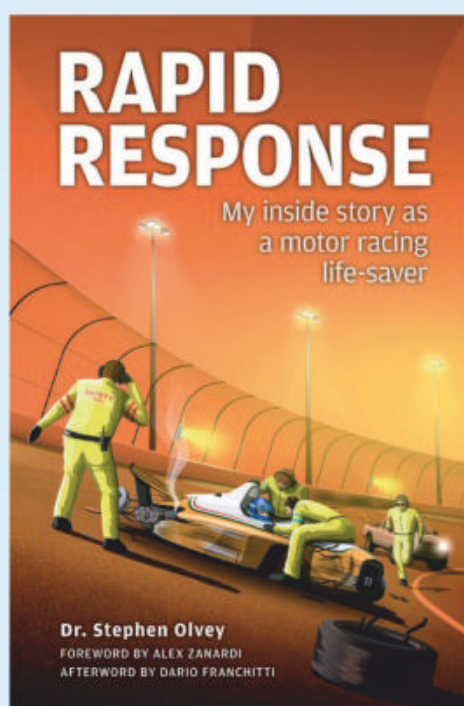
For nearly 50 years Dr Stephen Olvey has been improving safety and saving lives in motorsport. While fans of Formula 1 will be more familiar with the work of Prof Sid Watkins, Olvey had an equivalent role in the

United States motorsport world, predominantly working in Indycars.

Olvey's memoir *Rapid Response* was originally published in 2006, but has been re-printed to coincide with a new documentary feature film of the same title.

The opening of the book details the horrific accident that befell Alex Zanardi at the Lausitzring in 2001 and the graphic description of the medical rescue to save his life after he lost both legs. Like Sid Watkins' book *Life at the Limit* it's a frank and thought-provoking insight into the tragic accidents that occur in motor racing – and the emotional responses of the family and friends that have to come to terms with death and serious injury.

While he worked as the medical director in the US between 1979 and 2003, Olvey remains active in motorsport as a member of the FIA Medical Commission. If you missed this book first time around and are looking for a different perspective on the US racing scene, this is worth considering.



## AYRTON SENNA LOTUS REAR WING ENDPLATE

Lotus 97T & 99T

**Price** £10,000 each

[mementoexclusives.com](http://mementoexclusives.com)



Rear wing endplates from two Lotus cars Ayrton Senna drove in 1985 and 1987 have just been made available to buy from a personal collection. The first, a black Goodyear-sponsored endplate is from the Lotus 97T, the car in which Ayrton took both his first grand prix victory at the Portuguese GP and his second win at Spa (in 1985). Sold with original official Team Lotus documentation, this impressive piece of Formula 1 heritage is framed and measures 71cm x 68cm.

The yellow, Elf-sponsored second rear endplate is from Senna's 1987 Lotus 99T, the car in which he won back-to-back races in Monaco and Detroit. This framed endplate measures 68cm x 85cm.





### FORMULA 1: DRIVE TO SURVIVE

Netflix

**Price** £7.99 monthly subscription  
netflix.com

Throughout last season a documentary film crew gained unprecedented access to eight of the ten Formula 1 teams. They interviewed drivers in their homes and hotel rooms for a new ten-part series *Formula 1: Drive to Survive* – and it doesn't disappoint.

Each episode varies in length, from 26 to 40 minutes – totalling 5.7 hours – and is a fresh look at the 2018 season from inside the teams, focusing on the most interesting storylines of the year. Fans will be delighted to know it isn't a succession of talking heads either. The narrative is propelled by on-track footage and soundbites from various

commentators. The whole show has a cinematic style that looks beautiful and is worth hooking up to surround-sound speakers. Each on-track shunt is accompanied by a deafening deep bass *thud*.

Right from the off *Formula 1: Drive to Survive* sets the standard for its exclusive access by accompanying Daniel Ricciardo to his Australian home for a family barbeque. Another episode takes you to the living room of the Sainz family as they watch football on TV.

The only downside is the obvious lack of access to Ferrari and Mercedes. It would have been great to have had insight into their world championship battle, but both teams declined to sign up to the warts-and-all storytelling the makers envisaged. Perhaps next time, now they can see the results?



### ROUE CHR WATCH

**Price** \$260

rouewatch.com

This new watch from Roue is a modern timepiece but with stylistic design clues from classic cars of the 1960s and '70s.

The CHR comes with two interchangeable straps, leather and silicone, and there are three different

colour dials, black, gunmetal and antique silver.

There are four models in total in the Roue line and all use Japanese quartz movements. Water resistant to 50 metres, each timepiece comes with a two-year warranty. .

### IGP MANAGER

Android & iOS

**Price:** Free with in-app purchases  
igpmanager.com

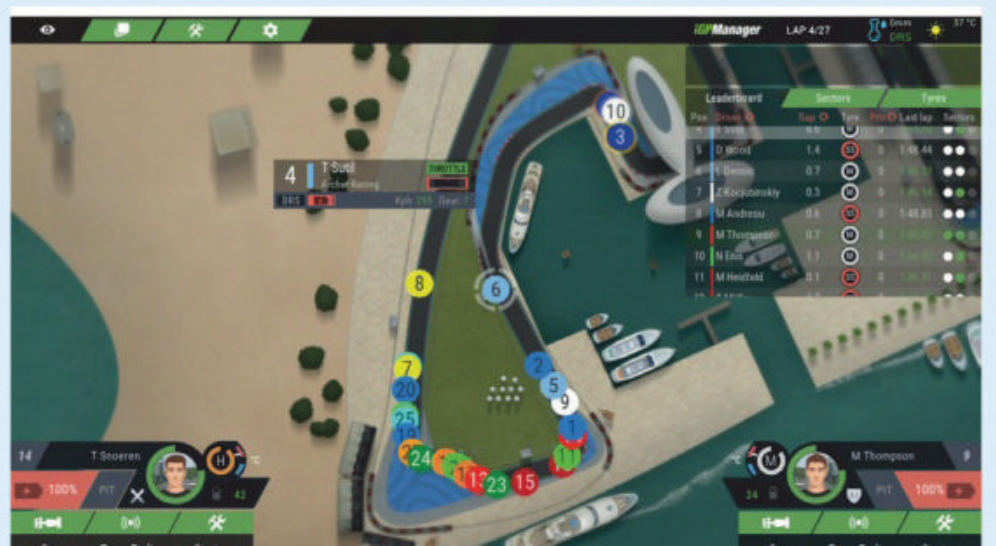
Games that put you behind the wheel have long been ubiquitous, but those that place you on the pitwall and ask you to take key decisions that make or break a whole team have always been rarer beasts. iGP Manager does exactly that, allowing you to set



development direction, hire and fire key technical personal and drivers, sign engine deals and sponsors, and invest in your factory facilities before calling the shots on a race weekend.

The focal point of the game is the real-time, multiplayer race management, which pits you against real-life rivals. As well as key strategy calls, you can impact battery usage to ensure you're fast enough in key phases of the race, and also how aggressive a driver can be, meaning you can make the difference between winning and being an also-ran.

Available for Android, iOS and browser, iGP is immersive enough to be compulsive without requiring too much commitment in terms of time.

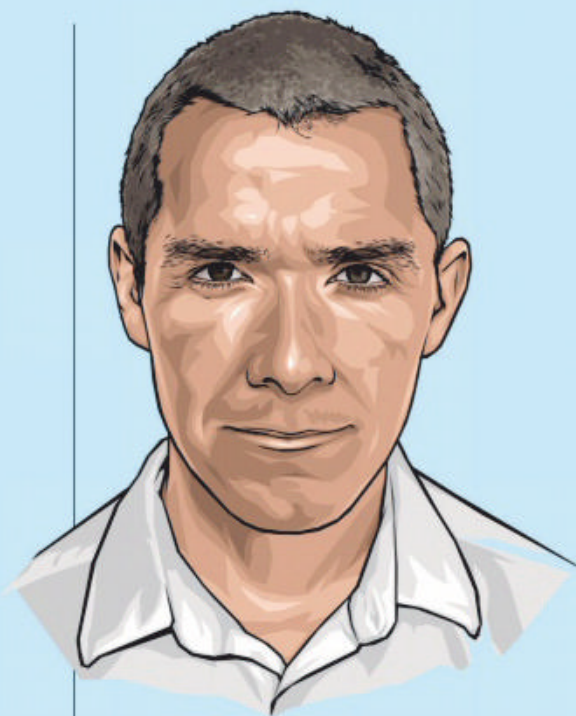






# THE FINAL LAP

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## THE PROBLEMS WITH THE SENNA LEGACY

**25 years on from Ayrton Senna's** tragic and untimely death, has the myth of Senna now surpassed and even smothered the reality, along with all its many complexities and contradictions? It feels very much as if we're compelled to worship the image rather than weigh the man in full; take the *Senna Sempre* logo, featuring an impressionistic image of his face, consciously aping the visual power of Che Guevara and James Dean iconography.

He has become an ideal, an archetype, a face on a t-shirt – worn, perhaps, by many individuals too young to have seen him race. Is this kind of nuance really that important? Well, it may be impious of me to suggest it, but really, in an age of works such as the shamelessly hagiographic movie *Senna*, there exists a clear danger of viewing his legacy through the rosy prism of nostalgia.

As a Formula 1 fan growing up in the 1980s, I must confess I struggled to warm to Senna. Yes, he was blisteringly quick, but his often

the latest details of his childish strop with the FIA, a body he felt was institutionally biased against him based on his disqualification from that year's Japanese Grand Prix, an outcome that handed

the world title to Alain Prost. Obviously – Prost was French, FIA president Jean-Marie Balestre was French. *Post hoc ergo propter hoc*.

Senna's rivalry with Prost had long since intensified beyond the bounds of rationality. It took Ayrton to some dark places. He harboured a belief he was receiving inferior equipment. He engaged in bizarrely extreme negotiating tactics with McLaren boss Ron Dennis, such as the impasse over a million and a half dollars in a contract negotiation that had to be settled by a coin toss. Being unfamiliar with the concept, Senna even pushed for clarity over what might happen if the coin rolled into the shagpile carpet and came to rest on its side. I don't know what I find more unsettling about this – the decadence of deciding such a sum over a coin toss, the neurosis

**“SENNA TOOK UMBRAGE  
WHEN HIS DEMAND THAT POLE  
POSITION BE MOVED TO THE  
OTHER SIDE OF THE TRACK  
WAS NOT ACTED UPON”**

over a neutral outcome, or the fact the famously fastidious Dennis permitted such a tricky-to-clean item as shagpile on his soft furnishings inventory.

And what of Suzuka 1990, where Senna took umbrage when his demand that pole position be moved to the other side of the track was not acted upon, and then deliberately hit Prost at 160mph on the first lap. Much later Ayrton would, in private, concede this darkly premeditated act wasn't his finest hour. In the aftermath, he tried to brazen it out, and his post-race interview with Sir Jackie Stewart has rightly become the stuff of legend. To my mind only Lance Armstrong has in subsequent years come close to matching Senna's look of sullen, cold fury as his interrogator picked apart the stream of platitudinous cant with which he sought to deny or justify his actions.

Lewis Hamilton names Senna as his childhood hero and inspiration but, apart from his tremendous natural speed, the near-ubiquity of his success and his occasional run-ins with authority, Hamilton has little in common with his idol. In an era in which it has become almost acceptable to drive a rival off the track and blame them for having the temerity to be there, Lewis races cleanly for the most part, and with respect. Aren't these values we ought to cherish too when weighing the legacy of drivers past?



**Senna is rightly remembered  
at Imola (above) but he did  
possess a dark side**

appalling manners on track – combined with his messianic sense of entitlement away from it – sat ill with me. Rarely would a race go by without him chopping abruptly across the nose of a backmarker he felt hadn't paid him due deference. Barely a week passed in the winter of 1989 without the pages of *Autosport* divulging

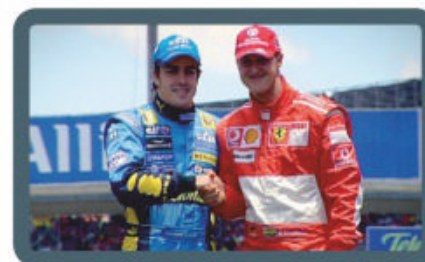




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