

**NICO VS LEWIS**  
WHY ROSBERG IS BEATING HAMILTON



**RICCIARDO ROAD TRIP**  
AUSTIN OR BUST IN ASTON MARTIN



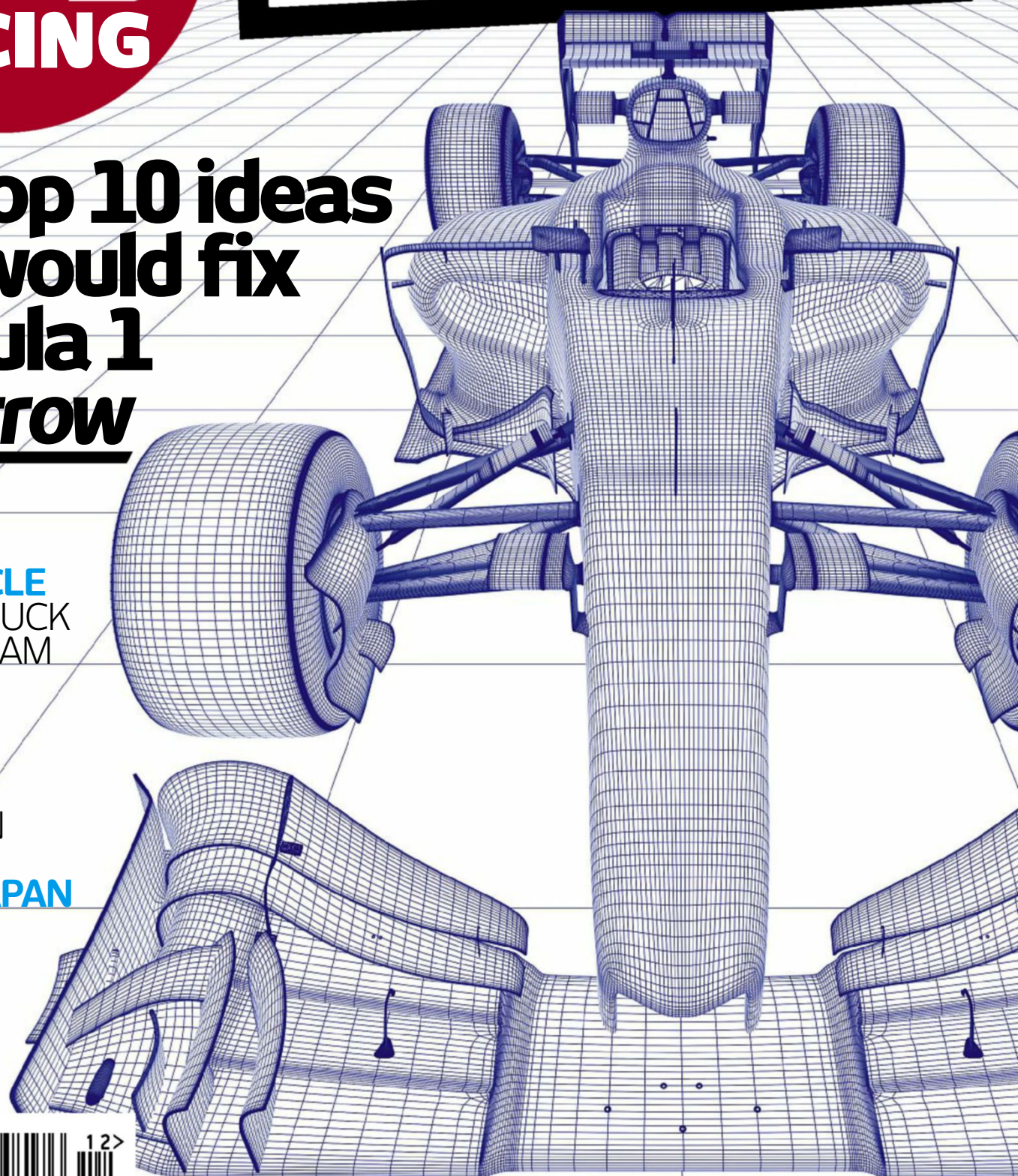
**REVEALED**  
**BLUEPRINT FOR A NEW FORMULA 1**

**The top 10 ideas that would fix Formula 1 tomorrow**

**PLUS...**  
**THE FORCE INDIA MIRACLE**  
BANG-FOR-BUCK F1'S BEST TEAM

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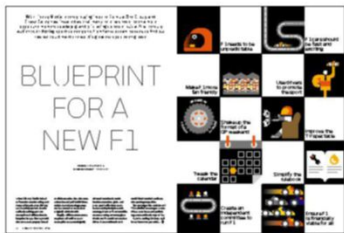
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Urban 55.4 - 80.7 (5.1-3.5), Combined 47.1 - 70.6 (6.0-4.0) and CO<sub>2</sub> 136-103 (g/km).  
information. Information correct at time of going to print.



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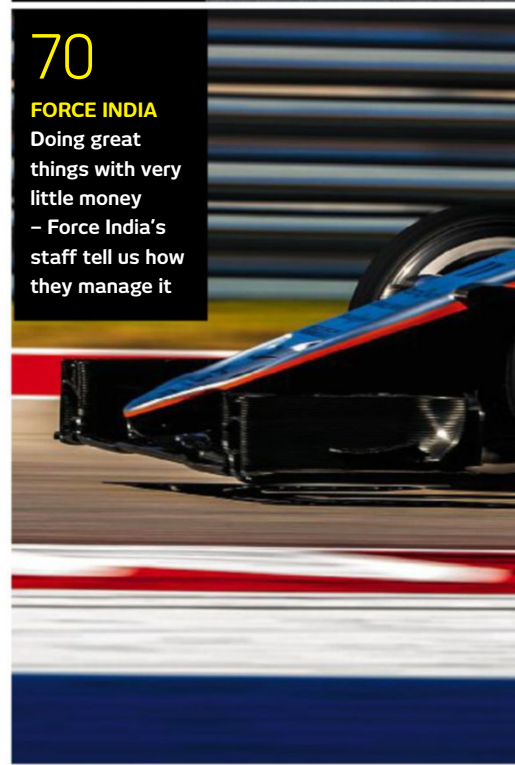
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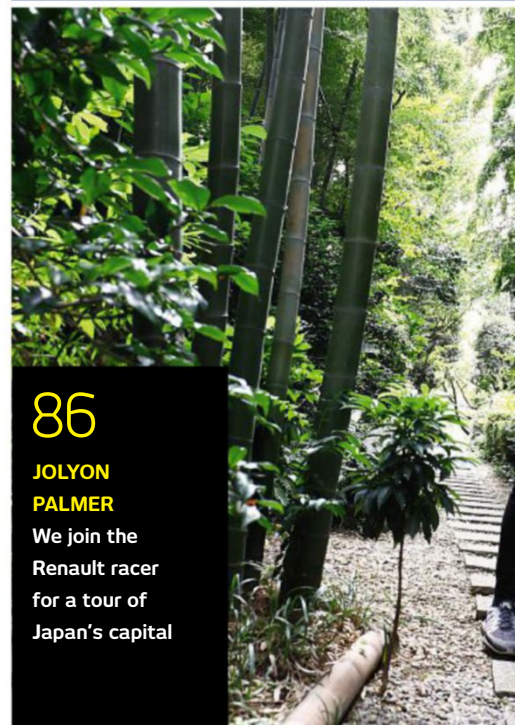
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**FORCE INDIA**  
Doing great things with very little money – Force India's staff tell us how they manage it



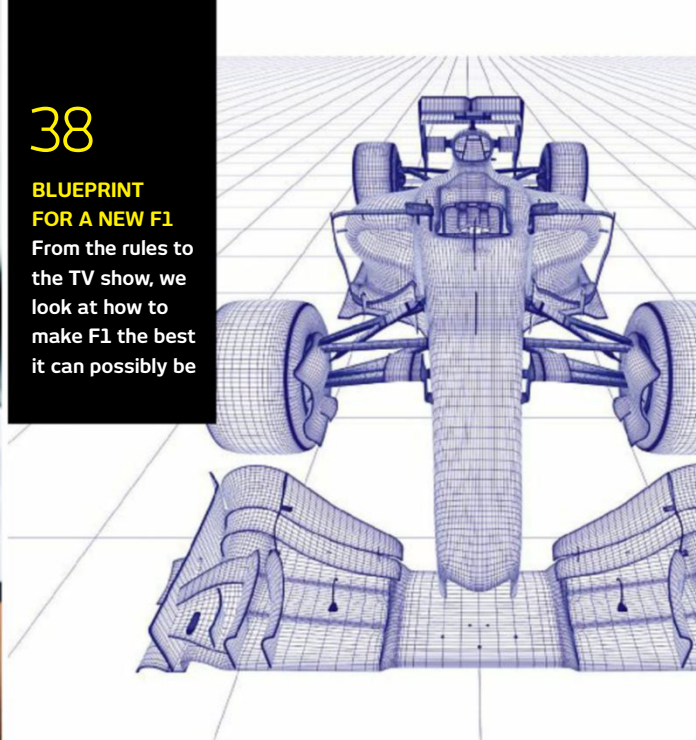
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**DANIEL  
RICCIARDO**  
A sightseeing  
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Aston Martin on  
the backstreets  
of Austin

# Why Rosberg would be a worthy champ



Follow Anthony on Twitter: @Rowlinson\_F1

**The trouble with** this year's world championship – from a British perspective at least – is the nationalities of the key protagonists.

Nico Rosberg, cast since 2014 as the battling underdog to Lewis Hamilton's mercurial megastar, should, of course, have been 'The Brit'. Lewis, meantime, should have been 'The Foreigner'.

Then, in a flash, we'd have had a narrative that better suited their respective abilities, and with which the mainstream media would have been more comfortable. Rosberg could have played 'Our Nico', indomitably plugging away at a superior rival.

The masses could have demonised Lewis for his occasional petulance, while grudgingly acknowledging his routine and often breathtaking brilliance. It would have been a modern re-run of Mansell against Senna, or Hill vs Schumacher. Island nation against tricky foe: outcome uncertain; plucky opposition guaranteed.

Instead, the message from central casting got garbled, and it's 'The Brit' who's exceptional – so much so that Hamilton was poised, at the time of writing, ahead of the Brazilian GP, to become the second most successful F1 driver *ever*, in terms of wins, with only Michael Schumacher ahead of him.

Rosberg, notwithstanding the nine wins he has clocked up this year, remains cast as 'The Trier' – the

doughty puncher gifted enough to pick up a victory when his main rival is compromised and sometimes, even, to surpass the efforts of his more starry opponent. But no one thinks he's truly worthy of being crowned champion ahead of Hamilton... do they?

That, dear reader, is where I draw the line, for in Nico Rosberg I see a highly talented, exceptionally intelligent, astoundingly resilient driver and sportsman who, should he prevail over Lewis, will have pulled off one of Formula 1's most remarkable turnarounds. Battered and bruised by Hamilton throughout the hybrid F1 era, Rosberg has simply refused to yield, let alone capitulate.

One abiding memory of the 2014 championship was Rosberg's 'rage against the dying of the light' at the double-points Abu Dhabi decider. He was the rank outsider for the title, but while there was a chance – while he was still afloat – he kept on swimming. One by one the electrical systems on his W05 began to fail: first the ERS, then other ancillaries, leaving Rosberg underpowered, underbraked and ultimately unable to halt Hamilton's imperious march to an 11th victory and a second world title. Ignoring calls to retire, Nico barked at his team: "I want to go to the end." And so he did, trailing home 14th, lapped, pointless, beaten.

Beaten... but not broken, for in 2015 he fought again to similar effect, and this year he has once more 'gone to the end'. And for that reason, for sheer dauntless strength of character, I would raise a glass to champion Rosberg, even while acknowledging the genius *sans pareil* of Lewis Hamilton.



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<b>THE TEAM</b>	<b>Photo Agency</b>
<b>Editorial Director</b> Anthony Rowlinson	LAT Images
<b>Group Managing Editor</b> Stewart Williams	<b>AUTOSPORT NETWORK UK</b> <b>Managing Director</b> Tim Bulley
<b>Associate Editor</b> James Roberts	<b>PUBLISHING</b> <b>Publishing Director</b> Stuart Williams
<b>Executive Editor</b> Stuart Codling	<b>Group Publishing Manager</b> Sunita Davies
<b>Chief Sub-Editor</b> Vanessa Longworth	<b>ADVERTISING</b> <b>Global Partnerships Director</b> Chris Gowland
<b>Art Editor</b> Frank Foster	<b>Partnerships Manager</b> LeAnne Foley
<b>Designer</b> Jack Woolrich	<b>UK Sales Manager</b> Ben Fullick
<b>Principal Photographer</b> Steven Tee	<b>Advertising tel +44</b> (0)20 8267 5179/5916
<b>Office Manager</b> Joanne Grove	<b>LICENSING</b> Stuart Williams
<b>Editorial Tel</b> +44 (0)20 8267 5806	<b>SUBSCRIPTIONS</b> <b>Subscriptions</b> <b>Marketing Executive</b> Maria Luisa Fernandez
<b>CONTRIBUTORS</b>	<b>Email:</b> help@f1racing.themagazineshop.com
<b>Columnists</b> Peter Windsor Dieter Rencken Damon Hill	<b>Customer hotline/back issues</b> 0344 848 8826
<b>Technical Consultant</b> Pat Symonds	

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## Contributors



**Paul Harpin**  
Creative director who's always quick on the draw

As a former Haymarket art director, Harpin has helped fashion many an *F1 Racing* redesign. This month, our 'Blueprint for a new F1' (p38) and Force India (p70) stories benefitted from his input



**David Evans**  
"Let there be mud", says our friend from World Rallying

Evans is more *au fait* with time cards and co-drivers than the nuances of F1, but it's from the WRC that McLaren's new CEO Jost Capito has arrived. Read David's profile of him on p58



**Peter Grundy**  
Illustrator and infographic artist extraordinaire

Peter Grundy was one half of information design pioneers 'Grundy & Northedge' and is now one whole of 'Grundini'. Find out more about him at [grundini.com](http://grundini.com) and take a look at his work on page 38



**Marcus Simmons**  
Deputy editor of our sister title *Autosport*

After abandoning a Formula First career in the early 1990s, Simmons joined *Autosport*. He still keeps a close eye on emerging talent, such as new Williams signing Lance Stroll (p78)



Thanks to Steve Aldous, Roberto Boccafogli, Matteo Bonciani, Fabrizio Campelli, Karun Chandhok, Jack Clarke, Tim Clarke, Steve Cooper, Russell Day, Sophie Dean, Fiona Fallon, Blake Friend, Will Hings, Darren Jones, Bradley Lord, Stuart Morrison, Chris Murray, Adrian Myers, Anna Pamin, Anthony Peacock, Daniel Stafford, Andy Stobart, Lynden Swainston, Fabiana Valenti, Bob Wayman, Nicola West, Ben Wyatt. **Special thanks** to Suzy Snelling, Paul Fisher, Melek Sahindal, Nadia and Richard Jackson, Jane Harley, Martha, Sarah, Daisy, Kevin, Nermin, Nicole and all the excellent staff at the Michael Palin Centre





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# Parade

**Smokin' hot** Pushing hard in qualifying for his home race, Esteban Gutiérrez locks up his left-front and consigns a set of Pirelli supersofts to the bin. His time is only good enough for P17, so no passage to Q2. Race day is worse: he brings his VF-16 home in P19, just ahead of team-mate Romain Grosjean

**Where** Mexico City, Mexico

**When** 2.04pm, Saturday 29 October 2016

**Photographer** Steven Tee/LAT

**Details** Canon EOS-1DX MkII, 600mm lens, 1/1000th at F10





# Parade

**Red missed** A swearsy Sebastian Vettel enjoys a P3 podium celebration in Mexico, after a five-second penalty for Max Verstappen who finished ahead. But wait... a further penalty, this time for Seb, who drops to fifth, behind Dan Ricciardo and Max. A 'shoey' will have to wait until another day

**Where** Mexico City, Mexico

**When** 3.58pm, Sunday 30 October 2016

**Photographer** Lorenzo Bellanca

**Details** Canon EOS-1DX MkII, 300mm lens, 1/3200th at F3.5







# Parade

**Crowded house** The Autódromo Hermanos Rodríguez is no longer the house of fear it was when it boasted the *cojones*-testing Peralta corner. But it still draws a massive and wildly enthusiastic Spanish-speaking crowd, who hailed *El Matador* Fernando Alonso as one of their own

**Where** Mexico City, Mexico

**When** 2.41pm, Saturday 29 October 2016

**Photographer** Glenn Dunbar/LAT

**Details** Canon EOS-1DX MkII, 200mm lens, 1/8th at F18



ROSS BRAWN 16



LANCE STROLL 18



CALENDAR CLASH 24

# F1 INSIDER

NEWS ■ OPINION ■ ANALYSIS

## NEWS

# Ron Dennis set to leave top McLaren job

Shareholder friction could result in the man who re-made the team in his own image moving on to pastures new

**Ron Dennis's latest stint** at the helm of McLaren looks to be coming to an end, following a decision by his fellow shareholders not to extend his contract beyond the end of 2016.

The move comes after a tense few years in the relationship between Dennis, who owns 25 per cent of the McLaren Group, and long-time business partner Mansour Ojeh, also a 25 per cent shareholder. Mumtalakat, the investment arm of the Kingdom of Bahrain, usually represented by Prince Salman bin Hamad bin Isa Al-Khalifa, own the remaining 50 per cent and are siding with Ojeh.

Dennis, 69, will be pulling out all the stops between now and the end of December to try to salvage his position. He has already told friends and associates that he alone will make the decision as to whether or not he steps down. But there is little he can do. He would remain a 25 per cent shareholder, but unless the Bahrainis and Ojeh suddenly change their minds, he is very unlikely to have any active role or power in running the company.

McLaren said in a statement that Dennis was "not stepping down". But this does not preclude him being removed in some other way.

Dennis has found himself in this position due to concern over the health of McLaren, as well as the deterioration in his relationship with Ojeh for both personal and professional reasons.

Chief among the concerns about McLaren's wellbeing, is the fact that the team have lacked a title sponsor ever since mobile phone giant Vodafone withdrew at the end of 2013, despite Dennis announcing in the March of that year that a new title sponsor would be in place by the end of the season.

Other losses have been mitigated by new deals: luxury watch maker TAG Heuer, who moved to Red Bull, were replaced by Richard Mille, while Boss clothing, lost to Mercedes, have been replaced by Michael Kors. And long-time fuel and oil partner Exxon Mobil, who are departing to join Red Bull next year, will be replaced by a new BP/Castrol deal.

**Between them, Mansour Ojeh and Mumtalakat own a majority 75 per cent shareholding in McLaren**



Even so, the McLaren F1 team have become increasingly reliant on support from engine partner Honda, funding from whom amounted to a net annual increase in revenue of \$100m for McLaren, compared with their previous Mercedes customer deal. There is currently no sign of any major new backer on the horizon.

Dennis has, for some years, been trying to raise the necessary funds to buy sufficient shares from Ojeh and Mumtalakat to take a controlling shareholding in McLaren. Sources inside McLaren say he has actually sourced funding from two separate Chinese consortiums. One was all set to go before a downturn in the Chinese economy caused the deal to collapse. Another is still in place, but Ojeh and Mumtalakat have decided they do not want to sell, according to senior insiders, because they do not want to grant Dennis any more control.

A number of names have been mentioned as possible replacements for Dennis. McLaren have contacted former Mercedes F1 boss Ross Brawn, although he is now set to take a role as CEO (Sporting) of the new Formula One Group. McLaren's own former team principal Martin Whitmarsh has also been approached, as has the former head of Sainsbury's, Justin King. Leading F1 marketing expert Zak Brown, who has been linked with a commercial role at the Formula One Group, has also emerged as a candidate.

Whitmarsh and King are considered unlikely to take the role, while Brawn recently told



## NEWS DIGEST

### The month's big stories at a glance

**12.10.16** Mercedes report £22.3m post-tax loss for the 2015 financial year **13.10.2016** Lewis Hamilton sits out 2017 tyre test with sore foot

**14.10.16** Nico Hülkenberg signs with Renault for 2017



**22.10.16** FIA introduces new rules on defensive driving and blue-flag etiquette **26.10.16** Circuit of The Americas chairman Bobby Epstein calls for a bigger gap between the US and Mexican GPs **01.11.16** Sebastian Vettel escapes punishment for Mexican GP radio rant after apologising to the FIA **03.11.16** Williams announce a 2017 line-up of Valtteri Bottas and Lance Stroll, and say Sir Frank Williams has left hospital after a bout of pneumonia

*The Daily Telegraph*: "I would never go back to a team. I did everything I could in a team, but I would be repeating myself". He added that a position "trying to help F1 become better would be appealing".

Martin Whitmarsh is committed to Ben Ainslie's America's Cup team until next year, and King is understood to be otherwise engaged.

Brown, meanwhile, would be an appealing prospect for McLaren, despite his lack of experience in running a Formula 1 team, thanks to his success at bringing new sponsors into the sport, such as Martini at Williams, Johnnie Walker at McLaren and UBS with the F1 Group.

Brown resigned as chief executive officer of the CSM sports marketing group in September, so he would be free to take on a major role within the sport.

PHOTOS: ALASTAIR STALEY/LAT; STEVEN TEE/LAT; GLENN DUNBAR/LAT; JED LEICESTER/LAT; XPRCC

**NEWS**

# Ross Brawn tipped to be F1's new sporting boss

New owners, Liberty Media, are keen to recruit the architect of multiple world championships into a long-term strategic role



**Former Mercedes Formula 1** chief Ross Brawn is poised to take up a new job running the sport for new owners Liberty Media.

*F1 Racing* understands that Brawn has agreed a deal to become CEO of the sporting side of the business, liaising with the teams and the FIA on shaping the future of F1. This encompasses part of the responsibilities currently undertaken by Bernie Ecclestone through his involvement with the Strategy Group of leading teams and the FIA.

But the commercial side of Ecclestone's role, signing race deals and television companies and securing sponsorship for the sport in areas such as circuit signage, is expected to be undertaken by a separate chief commercial officer.

Leading F1 commercial player Zak Brown has been strongly linked to that role, although he is also of interest to McLaren, while they seek a replacement for chairman Ron Dennis (see p14).

Brawn's position has not been officially confirmed, and he has not signed anything yet, but *F1 Racing* has learned that the deal has already been agreed and it is only a matter of time before it is officially announced. The 61-year-old, who over the course of a 30-year

career has won Formula 1 championships with his own team, Brawn GP, plus Ferrari and Benetton, as well as laying the foundations for Mercedes' current success, has indicated that this is exactly the sort of role that could tempt him back into the sport.

"I wouldn't want to go back to Formula 1 in the same capacities I've been in before," Brawn told *F1 Racing* over the course of an interview he gave for the January 2017 issue. "I've done all that. I would feel that I was doing it because I'd got nothing else to do, rather than trying to create something new.

"But as I said when I left, 'Never say never.' There are changes afoot, so I'll watch with interest and see what happens.

"The new owners are going to proceed cautiously, and they will need to establish exactly what sort of a role Bernie Ecclestone will fulfil over the next few years, and how he is going to hand over the baton – if he ever does.

"From my perspective as an observer over the past three years, I've been able to see F1 in a very different way from when I was operating within it as a competitor."

**QUIZ**



**EVERYONE'S A WINNER**

- Q1** How many Formula 1 drivers have won ten or more grands prix: 25, 29, or 33?
- Q2** Which race, in 2016, saw the highest winning margin of the year of 25.042 seconds?
- Q3** Which three constructors have won the Mexican Grand Prix three times each?
- Q4** What records do Luigi Fagioli and Max Verstappen hold?
- Q5** For which grand prix were 50 points awarded for the win?

- Q6** Who reached the milestone of 50 grands prix wins most quickly, out of Alain Prost, Michael Schumacher and Lewis Hamilton?
- Q7** In the last year of the tyre war in 2006, who collected the most wins: Bridgestone or Michelin?
- Q8** Five drivers have 'won' a race only to be disqualified later on. Who are they?

- Q9** Which season had a record of 11 different race winners?
- Q10** Who are the only team to have won just one race who are still competing today?
- Q11** Michael Schumacher has scored a record of the most wins at which circuit?
- Q12** Who won his first race in 1971, but didn't win again until 1976?

- Q13** Which driver finished in second place a record-breaking eight times, without ever actually winning a race?
- Q14** Who remains the only Formula 1 driver to win a race on his grand prix debut?
- Q15** Which engine manufacturer has won the more races: Renault or Mercedes?

1 33 2 Italian GP 3 Lotus, McLaren, Williams 4 Oldest & youngest winners 5 Abu Dhabi, 2014 6 Schumacher 7 It was a draw 8 Hunt, Piquet, Prost, Senna, M Schumacher 9 1982 10 Toro Rosso 11 Magny-Cours 12 Mario Andretti 13 Nick Heidfeld 14 Giancarlo Baghetti 15 Renault

PHOTOS: STEVE ETHERINGTON/LAT; SAM BLOXHAM/LAT; LAT ARCHIVE



**SHOULDERS CAN  
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# Stroll to join Bottas at Williams for 2017

The Canadian rookie's signing closes one vacancy on the grid, but others are still up for grabs at Renault and Force India



**Williams have re-signed** Valtteri Bottas for 2017 and will pair him with Canadian novice Lance Stroll (see profile, page 78).

Bottas had been courted by Renault, but Williams were very keen to retain him. There had been a dispute over his 2017 contract, which dictated a significant raise, but that was resolved ahead of the US Grand Prix.

Stroll's appointment owes much to the wealth of his father Lawrence Stroll, the billionaire Canadian businessman behind the fashion brands Tommy Hilfger and Michael Kors. Stroll is reputed to have paid in the region of £20m to Williams in 2016 for a development programme to prepare him for F1, which has involved a series of tests in a two-year-old car at circuits around the world.

The family are paying at least that amount again for a race seat in 2017. Stroll nonetheless earned his F1 driver's superlicence by winning convincingly the European Formula 3 title for the dominant Prema team.

There are seven F1 seats still to fill for 2017: one alongside Nico Hülkenberg at Renault, one alongside Sergio Pérez at Force India, another alongside Romain Grosjean at Haas, and two each at Sauber and Manor. Mercedes boss Toto Wolff is at the centre of this merry-go-round as he seeks to place both his junior drivers, Pascal Wehrlein and Esteban Ocon, with teams.

Renault driver Kevin Magnussen has been offered a seat at Haas, but is one of the leading candidates at his current team, where Ocon is the other name in the frame. Magnussen would prefer to remain where he is but may feel a move to Haas is a more stable situation. The American team are offering him a two-year deal as opposed to the single season on offer at Renault.

Renault's prevarication over Magnussen – they have already tried to sign Pérez, Bottas and Toro Rosso's Carlos Sainz – may swing his decision in Haas's favour. Haas are close to dropping Esteban Gutiérrez after his unconvincing performance this season.

Magnussen's Renault team-mate Jolyon Palmer is hoping to be given the second seat at Force India if he cannot retain his current drive, but he faces opposition there from Ocon, who is believed to be the number-one choice. Palmer has a budget to take to a team, and has had an increasingly impressive debut season, but the prospect of a reduction in engine bills from Mercedes in return for taking one of Wolff's juniors may be a key consideration.

Sauber drivers Felipe Nasr and Marcus Ericsson are also both in contention at Force India, as well as at their current team.

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**NEWS**

# Vettel first to be hit by new defensive penalties

The multiple world champ falls foul of new FIA rule clarification outlawing the controversial tactic of moving under braking



**Sebastian Vettel** has become the first driver to be penalised under a new rule prompted by the controversial defensive moves employed by Red Bull's Max Verstappen this season.

Verstappen's tendency to change line in the braking zone has angered his rivals, who have operated for many years under a gentleman's agreement that moving under braking is unacceptable. Verstappen also uses another controversial tactic known as 'wait and move', in which a driver hovers in the middle of the track until he sees which side a rival is going to attack on, and only then moves to defend.

The more accepted practice of defence is to choose a line to defend on and then fight the corner from there while leaving at least a car's width between the car and the edge of the track.

Ironically, Vettel has previously been very outspoken about Verstappen's actions. Yet he was found guilty of moving under braking and causing Red Bull's Daniel Ricciardo to take evasive action in Mexico. Vettel was given a 10s penalty and dropped from third to fifth.

**Vettel was handed a ten-second penalty at the Mexican Grand Prix for moving under braking**

The rule clarification issued by the FIA states: "Any change of direction under braking which results in another driver having to take evasive action will be considered abnormal and hence potentially dangerous to other drivers. Any such move will be reported to the stewards."

This clarification was applied under Article 27.5 of the sporting regulations, which states that "no car may be driven... in a manner which could be potentially dangerous to other drivers..." and Article 27.8, which prohibits any manoeuvre "liable to hinder other drivers, such as... any abnormal change of direction".

Drivers and teams were also reminded of Article 27.6, which says: "Any driver moving back towards the racing line, having earlier defended his position off-line, should leave at least one car width between his own car and the edge of the track on the approach to the corner."

All leading drivers have backed the move.

**F1 BANTER**

## PASSNOTES

Your essential F1 briefing #33 Anglo-Saxon



**Name** Anglo-Saxon  
**Age** About 1,600 years  
**Appearance** Germanic

**Is this going to be something about the South Yorkshire heavy metal band of the 1970s, best known for *Wheels of Steel*?**

I speak of the root of the English language, imported by Germanic settlers in the fifth century; verily, my friend, the *lingua franca* of such early works as *Beowulf* and *The Proclamation of Cnut*.

**I beg your pardon?**

More commonly known as Canute. Bloke with the deckchair in that Depeche Mode video.

**Oh, I see. "Let all the world know that the power of kings is empty and worthless" and all that.**

**So what is the root of your linguistic blither?**

Sebastian Vettel got in trouble in Mexico after deploying a choice selection of four-letter words believed to have derived from Anglo-Saxon.

**Well, they did say that life in the Middle Ages was nasty, brutish and short.**

Indeed. Although, while such words as *scitte*, *tord* and *beaullucas* evolved from everyday Anglo-Saxon words into English expletives, other nouns – particularly the one Seb used to describe Max Verstappen – arrived in the 13th century, origin unknown, although Old Norse is suspected.

**I feel like I'm in a room with Geoffrey Chaucer. I also worry that this dialogue should have been preceded by a parental advisory notice.**

According to *The Times Higher Education*, "While terms for genitalia, sex and effluvia were not explicitly profane or taboo in Anglo-Saxon England, the writers of Old English, despite their monastic background, were part of a wider culture that took great enjoyment in these subjects and found creative ways of communicating their salacious or bawdy intent."

**I don't know whether to be disappointed or not.**

How about this, though: according to *QI*, the Norse word 'rassragr' was so *infra dig* that you could legally kill someone who directed it at you.

**They say no knowledge is wasted, but in that case I'll make an exception.**

**Do say** Sounds like a load of beaullucas to me

**Don't say** [EXPLETIVE DELETED]

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PHOTOS: ALASTAIR STALEY/LAT; STEVE ETHERINGTON/LAT; STEVEN TEE/LAT

**Rumours: Paddy Lowe (left) could go to Ferrari; James Allison (centre) is linked to McLaren, Mercedes and Red Bull; James Key (right) is linked to Williams**
**NEWS**

# Leading tech bosses set to swap sides for 2017

Senior technical figures James Allison, Paddy Lowe and James Key could be on the move among the top teams next season

**Formula 1 could be poised** for a major reshuffle of leading technical staff, as speculation mounts about the futures of James Allison, Paddy Lowe and James Key.

After splitting from Ferrari at the end of July, Allison, 48, is a free agent. He is arguably the most highly regarded aerodynamics leader in F1 after Red Bull's Adrian Newey, and his reputation has not been harmed by his departure from Ferrari. Seasoned Ferrari-watchers believe Allison to have been on the wrong side of a questionable decision by Ferrari President Sergio Marchionne, who sought to restructure the team.

Allison is on a year's gardening leave, so would not be allowed to start work in a new role until

summer 2017. Renault have made him an offer to return to the team whose technical arm he ran from 2005-12, but he has turned them down.

McLaren are also interested in Allison, having tried to recruit him in 2012 before he chose Ferrari instead, but sources say he will not contemplate going to McLaren if Ron Dennis remains on board (see page 14). Allison has also been linked with a move to Mercedes, where the future of executive director (technical) Paddy Lowe is in doubt, and to Red Bull. At Red Bull, design chief Adrian Newey's presence complicates matters. His position is sacrosanct, but he isn't committed to the F1 programme full time as a result of the soon-to-be-launched

Red Bull-Aston Martin supercar, a project he is working on at the same time.

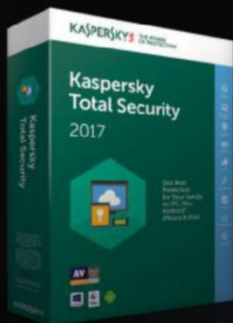
The contract Paddy Lowe signed when he joined Mercedes in 2013 is now believed to be coming to an end. Mercedes F1 boss Toto Wolff refused to comment on any potential interest in Allison, or on Lowe's future. Lowe has said publicly that he enjoys working at Mercedes and sees no reason to leave, but there are rumours that he has been offered a double-your-money deal from Ferrari.

Sources close to Lowe believe he will probably stay where he is. It is clear he has not already made a decision to leave Mercedes, since he is continuing to operate and attend all races in his current role. If he were moving, this would almost certainly not be allowed to happen.

Meanwhile, Toro Rosso technical director James Key is said to be set to join Williams in a similar role at the end of 2017, according to sources close to the team. Key, 44, formerly of Sauber and Force India, is one of the most highly regarded of the new generation of technical leaders and it's believed his presence would help strengthen the engineering team based at Grove.

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Kimi Raikkonen



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**NEWS**

# At least three GPs on 2017 calendar are now in doubt

Concerns are escalating over the long-term futures of the Brazilian, Canadian, German and Malaysian Grands Prix

**Formula 1 is facing** a calendar crisis, with reservations being expressed about several races on the schedule.

Brazil, Canada and Germany are all listed as 'provisional' GPs on next year's calendar, which has a nominal 21 races in a very similar pattern to this year. And the Malaysian government is doubtful about renewing its contract when it expires in 2018, on account of declining ticket sales for the event.

Canada has two problems. Firstly, the organisers have failed to update the pits and paddock area as was agreed when they signed their current contract, and have been in talks about extending the timescale for this to 2018. Second is a potential tax issue. Insiders say the government wants F1 workers to fill in tax returns based on the proportion of their annual income earned while in Montréal for the race.

The Brazilian GP is in trouble because of money. It has a deal to host the race, but sources say that Bernie Ecclestone, who has a close relationship with the organiser, is demanding more cash, and the fragile state of the Brazilian economy means there are difficulties paying it.



**Brazil can't afford to pay any more money to host its grand prix, so could drop off the calendar in 2017**

Hockenheim is listed as Germany's host track for 2017, despite next year not being part of its deal that alternates the GP with the Nürburgring. The Nürburgring has not held a race since 2013 due to financial problems. In 2015, Hockenheim decided it could not afford the race and a compromise deal, in which Mercedes offered €5m to bridge the gap, could not be agreed.

Malaysia has been hosting a grand prix since 1999, but circuit boss Razlan Razali said the 120,000-capacity track attracted only 45,000 fans for this year's race. "If there is no economic value, why should we continue?" he said.

**MIRTH**

## SEPARATED AT BIRTH...

**Stephen Tompkinson**



Formerly of *Ballykissangel* fame; now stars in gritty detective series *DCI Banks*

**James Key**



Formerly of Force India and Sauber; now technical director of Scuderia Toro Rosso

**NEWS IN BRIEF**



**VANDOORNE WINS FINAL SUPER FORMULA ROUND**

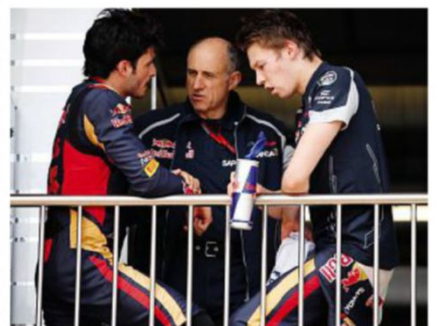
McLaren's 2017 racer Stoffel Vandoorne won his final race in the Japanese Super Formula series this year. It made him the highest-placed driver in a car using a Honda engine, which is less powerful than the rival Toyota.

**BAHRAIN TEST DROPPED**

Next year's pre-season tests will both be held at the Circuit de Barcelona-Catalunya, following a dispute in which some of the teams backed Pirelli's desire to run one of the tests in Bahrain. A compromise was reached that means the first in-season test will now be held in the Gulf state, following the third race of the season.

**MARTIN LEACH 1957-2016**

Former Ford executive Martin Leach, who raced in karts against the likes of Ayrton Senna nemesis Terry Fullerton, died from cancer in early November. As president of Ford Europe he engineered a team-saving deal to supply Jordan with Ford engines in 2003, and was more recently involved in the NEXTEV Formula E team.



**TORO ROSSO KEEP SAINZ AND KVYAT**

Scuderia Toro Rosso confirmed over the weekend of the US Grand Prix that they will retain Carlos Sainz and Daniil Kvyat for 2017. Kvyat had been expected to be replaced by Frenchman Pierre Gasly. "In recent races, it has been clear that Daniil is back on top form," said team principal Franz Tost.

PHOTOS: ALASTAIR STALEY/LAT; STEVEN TEE/LAT; GLENN DUNBAR/LAT; YASUSHI ISHIIHARALAT



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With its stainless steel and ion-plated case, this design shows performance-driven character. The second hand has a signature Scudetto counterbalance, while the strap, with contrast top-stitching, is inspired by Ferrari steering-wheel covers. [store.ferrari.com](http://store.ferrari.com)



### ▼ ORIS WILLIAMS

Oris have introduced their latest series of watches in partnership with Williams, reflecting the speed, power and technology of F1. While the 42mm brushed stainless-steel case has been retained from the launch range, the two-piece dial creates a sportier and more technical feel. [oris.ch](http://oris.ch)



### ▲ EDIFICE SCUDERIA TORO ROSSO EFR-554TR

This limited-edition model celebrates the partnership with Toro Rosso, using the team colours to accent detailing on both watch and case. The watch bears the team logo and comes with a display stand and commemorative card. [casio.co.uk](http://casio.co.uk)



### ▲ TAG HEUER FORMULA 1 RED BULL SPECIAL EDITION

To celebrate their first year of partnership with F1's four-time champions, TAG Heuer have introduced this very special series of timepieces, featuring team colours, with black-gold and sapphire-crystal detailing, and a polished steel case. [tagheuer.co.uk](http://tagheuer.co.uk)

### ▼ ROLEX OYSTER PERPETUAL COSMOGRAPH DAYTONA

This watch was designed to be the ultimate timing tool for endurance racing drivers due to its precision, reliability and outstanding legibility. Time intervals can be measured to within 0.125s, using the centre chronograph seconds hand. [rolex.com](http://rolex.com)



### ▼ C70 GRAND PRIX SERIES LIMITED EDITIONS

A must for any UK motorsport fan, this watch celebrates the first British GP, won by French duo Sénéchal and Wagner in 1926. The watch features a racing-green colour scheme, with a Union Jack stamped on the backplate. [christopherward.co.uk](http://christopherward.co.uk)



### ▲ BELL & ROSS BR-X1 RS16

Bell & Ross, the ultimate reference in aeronautical timepieces, is now the official watch partner of the Renault F1 team. These limited-edition skeleton chronograph watches feature the Renault team colours and made their debut at the Chinese Grand Prix in Shanghai. [bellross.com/uk](http://bellross.com/uk)



### ▲ RICHARD MILLE

In February, Richard Mille announced their partnership with McLaren Honda, and their watches have since been worn by Jenson Button and Fernando Alonso. This unique and exclusive series of timepieces has been inspired by the rich heritage of the McLaren brand. [richardmille.com](http://richardmille.com)

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Pat Symonds explains  
**THE SCIENCE BEHIND...**  
**Vortices, wakes**  
**and wheelnuts**

**F1 TECH**

**What exactly is a vortex?**

Aerodynamicists will argue over a precise definition, but in simple terms it is a coherent rotational flow of fluid around a low-pressure core. We see a vortex every time we watch water drain out of a sink, while satellite photographs of tropical storms illustrate the power of a vortex.

**Why are they so important?**

Because a vortex is a high-energy stream of air, it can be used to control lesser air flows. Indeed, one of the strengths of the vortex flow control is that you can use combinations of vortices to produce a net flow in a different direction. For example, imagine you could produce a vortex that was spinning anticlockwise and, some distance below it, another one that was spinning clockwise. Where the two spinning flow fields coincided, between the two vortices they would both be travelling in the same direction, like two gear cogs, and hence would push the surrounding air in that direction.

**What do you do to make a vortex spin in a particular direction?**

Air is lazy, and will always take the easiest route to a stable state. Imagine an aircraft flying through the air. It is supported by having a higher pressure under the wing than above it. Now at the wing tip, the higher-pressure air wants to curl around to join its lower-pressure friends. If we consider the right-hand wing, then, viewed from the rear, the air will travel anticlockwise to cascade over the wing tip from bottom to top. But, of course, the aircraft is in the process of moving forwards, so this simple anticlockwise flow is distorted into a corkscrew shape because of the relative movement of the wing and the surrounding air.

We have therefore produced (when viewed from the rear) what is an anticlockwise vortex. Conversely, on the aircraft's left-hand wing, the flow will roll up into a clockwise vortex when viewed from the rear.

**Can you explain the difference between a wake and a vortex?**

We defined a vortex earlier as being a coherent rotational flow. Relatively speaking, the flow field of a vortex does not vary much over time until it eventually bursts. If you consider the wing tip vapour trails left by aircraft in still air, they are quite predictable. A wake, on the other hand, is a much more chaotic movement of air. It is caused by air rushing into a low-pressure void left by a moving body. While a vortex can be used to enhance aerodynamics, a wake nearly always has a destructive effect.

**What produces wakes and vortices?**

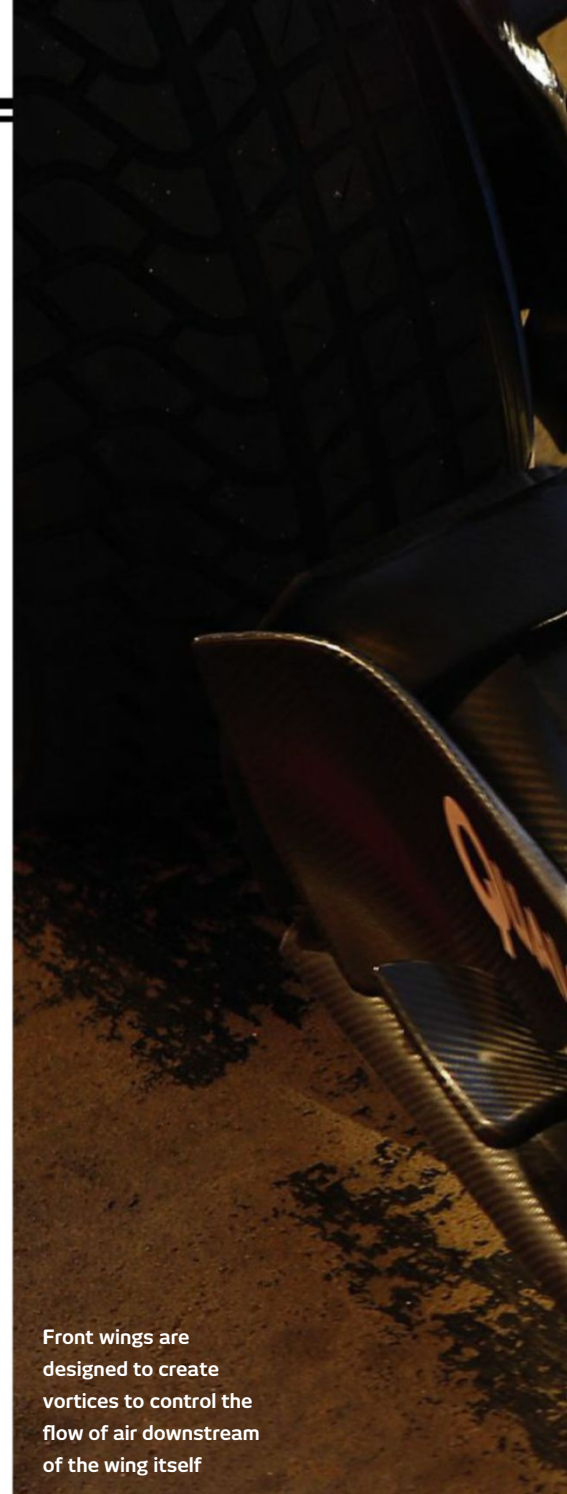
A wake is produced by any solid body moving through the air, and the larger it is, the larger the wake will be. A vortex, on the other hand, is produced by a feature of the body that is both moving through the air and has a pressure differential across it.

**Is the complexity of F1 front wings all to do with wakes and vortices?**

Indeed it is. Of course some of the elements of the front wing work in a conventional wing-like way, but many of the flaps and fences, as well as the footplates of the wing endplates, are designed to produce vortices to condition air flow downstream of the wing itself.

The regulations require us to design front wings with a 500mm-wide centre section, which is designed to be aerodynamically neutral. Where this joins the downforce-producing elements, a very strong vortex is created. This is known as the Y250 vortex, because it is 250mm from the centreline in a Y direction. This is probably the most important flow feature on the entire car, since it is used to keep the front-wheel wake from having a destructive effect on the underfloor aerodynamics.

Believe it or not, a modern front wing consists of nearly 300 separate components that are bonded together. In addition, nearly 200 moulds

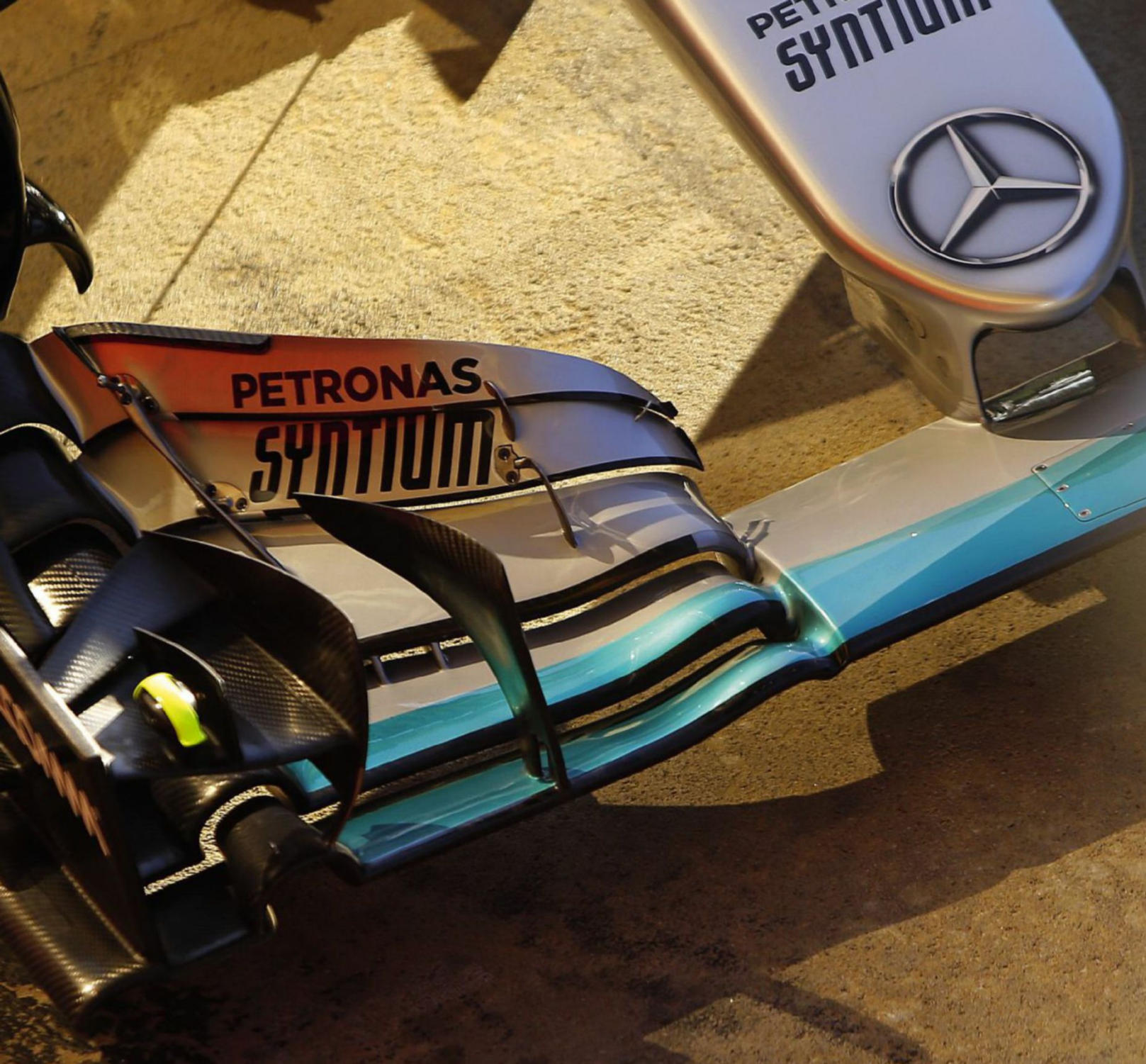


Front wings are designed to create vortices to control the flow of air downstream of the wing itself

are required to produce a wing, and once the parts are all manufactured a jig consisting of around 350 components is needed to assemble it correctly. You can understand why it takes more than four weeks to make a wing, and why it is so frustrating to see them damaged so regularly.

**Why is the wake so destructive to aerodynamics?**

Aerodynamicists would like the onset flow to all their surfaces to be clean, with minimum turbulence intensity, and indeed this is what the leading edge of the front wing sees when the car is in the windtunnel or on track and not following another car. All surfaces behind the front wing experience some level of turbulence and this makes the aerodynamic performance less predictable. This is also the reason why it is



difficult for an F1 car to follow another one as the wake of the leading car has a serious effect on the air flow, which impinges on the trailing car.

**How does the blown hub fit into this?**

An objective of the front-wing flow field is to push the wake from the front wing sideways so

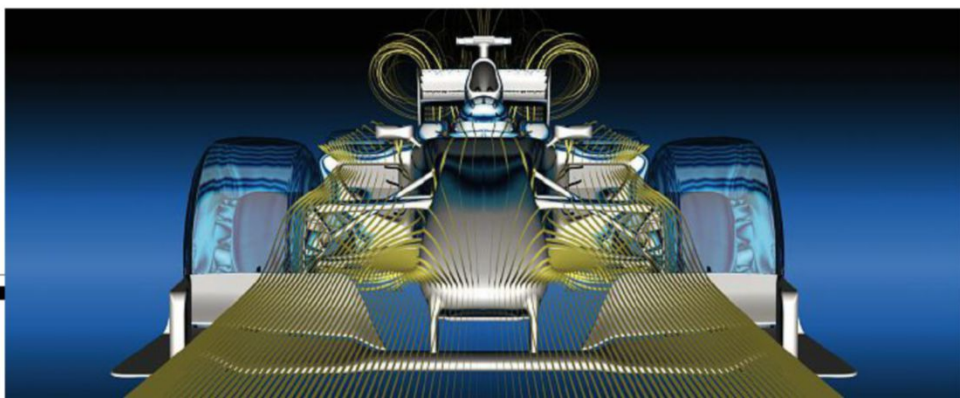
it has less effect on the bodywork and rear wing. The blown hub passes energetic air through the front axle and assists this out-washing effect.

**If the front wheel is so important, how do you simulate it in the windtunnel?**

In fact both the front and the rear wheels

are important in terms of the aerodynamics, and even simple things like tyre wear have a profound effect on the ability of the car to develop downforce. In the windtunnel we run the model on a moving belt, which both rotates the wheels and represents the correct air flow under the car. The pneumatic tyres on the model are very precise representations of the real tyre, and the construction is designed to mimic the distorted shape of the real tyre when subjected to load. In this way we can develop the aerodynamics using broadly correct tyre shapes, although as anyone who has watched a slow-motion video of an F1 car will know, this shape is constantly changing. 🚗

**A vortex is created on a Formula 1 car when higher-pressure air curls round to join lower-pressure air**



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## RACER'S EDGE

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**P**eter Collins was staying at the ornate Palace Hotel in Milan because, back then, the traffic to Monza was light even on race days. And he should have been in love with the moment. He was a Ferrari driver in the 1956 Grand Prix of Europe, at Monza, the citadel of Italian motor racing. He had won two grands prix that season and on the morrow he could become champion. And yet... *And yet...*

Three times he cried out in the night, caught in the vortex of shuddering nightmares.

*"The tyres! The tyres!"*

He would force himself to sleep, for Sunday's drama would be life-changing, even within the whirlwind of his year so far. Hazily, he saw the huge grandstands. He saw the bumpy, white new banking ahead of him: 165mph, 170mph, 175mph. He could feel the pounding of the car through every bone in his body...

*"The tyres! The tyres!"*

Sweating, he lay back, adjusting the pillows.

It had been quite a year. Stirling Moss and Ken Gregory changed his life in 1955 by asking him to drive alongside Stirling in the factory Mercedes in the Targa. He biffed a wall and lost a minute, but was able to hand the car back to Stirling with a good lead still intact.

Then there was that business with the Mercedes pull-out and the lost telegram.

# F1's greatest ever sporting gesture

Stirling and Ken wanted him at Maserati but a message had gone awry. Ken's "Are you interested in Collins driving Maserati?" telegram had produced a 'no' from Maserati owner Adolfo Orsi because he'd only just hosted Colin Davis in Modena, and assumed "Collins" meant 500cc racer Davis. By the time Ken had explained, it was too late; photographer Bernard Cahier had by then arranged an introduction to Enzo Ferrari.

The deal was signed and Ken was now managing him as much as anyone could manage Peter Collins. None of this air-travel lark in the next contract: he and Taffy von Trips would insist on a ship passage to Argentina next January.

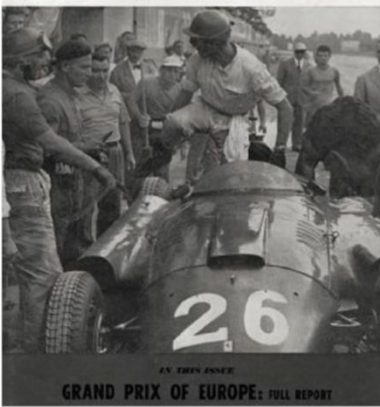
It had been an unforgettable spring: the wonderful pre-race party at Bernard Cahier's new house in Villefranche-sur-Mer; second place at Monaco; his first grand prix win, at Spa; victory in the Monza 1,000km with his mate Mike Hawthorn; and then, tragedy. Dino, Enzo Ferrari's son, died of kidney failure brought on by muscular dystrophy at the end of June. And now Signora Laura Ferrari, Enzo's wife, was going about her business as usual, stopping by Peter's Maranello apartment to do the washing or to bring him some pasta. Was Peter in some way now filling the void left by Dino?

Maybe so, maybe not. He'd won the French GP at Reims. He could still hear the sound of the Lancia-Ferrari as it screamed down the long straights between the French fields in the summer sun, Fangio's red Ferrari ahead, while it lasted. Then he was racing only Eugenio Castellotti, and he had won that battle, too. That put him into the lead of the world championship.

They'd stayed in France, Stirling and he, to race Astons in the sportscar race at Rouen. His drum-braked DB3S had handled better through the fast swoops – and so he had passed it to Stirling, his mate. Then



"I love life. I love racing – but if I'd won today there'd be too much pressure on me"



Peter Collins (below) gave up his Ferrari, and his own chance of winning the championship, to let his team-mate, Juan Manuel Fangio, (above) take over and claim a fourth title



came a fuel leak in the German GP: blurred vision and nausea. Now Monza. The Englebert tyres chunking on the banking at high speed, suspension parts breaking... the title at stake.

Under a golden sun, Castellotti and Luigi Musso raced for Italy, punishing their tyres as they flicked from lock to lock on the banking. Castellotti's Engleberts were first to wilt. Then Musso stopped for new tyres, as did Peter. Stirling raced away into the lead for Maserati.

Fangio, who needed to finish at least third, retired his Ferrari with a broken steering arm. When Musso stopped again, Ferrari's team manager, Eraldo Sculati, urged Luigi out of the car so that Fangio, standing by, could take over and thus secure the championship. Musso stared resolutely ahead, ignoring the order.

Then it was Peter's turn to stop for tyres. He, too, could sense victory, but wasn't that Fangio, there on the pitwall? Sculati turned his palms upwards with raised eyebrows. There was no order. Yet Peter Collins, at that moment, beckoned to Fangio that he should take over his car. Fangio took the time to embrace Collins before charging back into battle.

It wasn't over. Stirling's Maserati ran short of fuel with 11 laps to go. Noticing Luigi Piotti's 250F in his mirrors, Stirling waved his arms, gesturing for a push. Piotti braked, nosed in behind Stirling's Maserati and shunted it from behind, imparting enough momentum for Stirling to make it to his pit. Then Musso suffered a tyre and suspension failure, forcing him into a huge spin that ended just short of the pit entrance. Devastated and shocked, he burst into tears as the crowds engulfed him.

So Stirling, and Maserati, won Monza by 6s from the Ferrari of Fangio and Collins. And Fangio won his fourth world championship.

That night, over dinner in Milan, Bernard Cahier asked Peter why he'd given up the chance to be champion. "Fangio's our greatest driver; he deserves it," replied Peter, who was now his usual, relaxed self. "I'm not prepared to play that role so soon. I love life. I love racing – but if I'd won today I'd have been saddled with too many responsibilities and there'd be too much tension and pressure on me. I'm still young. Life is wonderful and I want to enjoy it in a relaxed way."

Peter Collins would marry the girl he met at Cahier's Villefranche party, actress Louise King. And he won the 1958 British GP in brilliant style. He lost his life two weeks later, when he and Mike Hawthorn were chasing Tony Brooks on the absolute limit around the Nürburgring. His gesture at Monza, 60 years ago, is considered to be the greatest single act of sportsmanship in the history of Formula 1. 🏆

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DIETER RENCKEN

# POWER PLAY

The stories F1's bigwigs would rather you didn't know...

**F**ormula 1 believes firmly that it is a world unto itself, but recent events in Africa – ironically the only continent without a grand prix – prove categorically that the sport does not exist in a bubble of its own making. The announcement in October that French oil company Total have agreed an eight-year title sponsorship deal with the Confederation of African Football to sponsor ten CAF leagues (1,500 matches) has sent ripples through F1.

As fuel and lubrication partner to Renault, the oil company not only serviced the French team and their engine customer Red Bull, but also, crucially, provided both with funding estimated to run to \$15million (£12m) each annually. However, following the elevation of Total CEO Patrick Pouyanné to the additional role of chairman in December 2015, the company have decided to switch their commercial focus from F1 to football.

The move means Total are willing to provide technical support to their engine partners, but no further financial backing. You could interpret that as a vote for F1 and its hybrid engines as a technological test bed, but not as marketing pedestal. Saliiently, Total are not unique in this regard: earlier this year, Shell confirmed they had not renewed

# Oil firms shift focus from F1 to football

their marketing deal with Formula One Management, although their Ferrari technical partnership continues.

The long and the short of this is that Renault and Red Bull each stand to lose funding from 2017, and while Renault could still reverse the decision by playing their 'first-fill' and 'recommended lubricant' cards (oil and fuel supplied to every new car coming off Renault's production lines globally, and through their service workshops) Red Bull do not have that leverage.

Thus team boss Christian Horner has gone oil-sponsorship hunting, and, by most accounts, found a possible partner in ExxonMobil, purveyor of money and lubricants to McLaren for two decades, but no longer the force they once were. During the US GP weekend, a party close to Red Bull and Mobil stressed that no deal had been inked, but neither side denied that talks were well advanced. If such a deal were to happen, it would leave McLaren with a hole to plug.

The word in Austin's paddock was that McLaren had pitched BP/Castrol for a combined technical/commercial deal, but that Honda's underperformance is an issue. It is also a possible reason for Mobil's receptiveness to Red Bull, since, in the words of our source, "smoking Hondas do Mobil no favours..."

Whatever happens, the consequences of any switch for Renault are significant regardless

of whether the team retains Total as a partner in any capacity, for a change of oil supplier would also demand comprehensive validation and engine re-mapping programmes. The costs of these potentially run to millions in any currency – and, if Renault's engines are run on two brands (Total and Mobil, say) such disruption will be considerable.

Honda, too, would need to jump through the same hoops, and while the timeframe for such revalidation programmes is estimated to run to a month or so, assuming that no major glitches make themselves apparent, these disruptions could not come at a worse time, for engine suppliers are currently working intensively on upgrades for 2017, when engine development is freed up. Now consider the impact of revalidation on that.

Theoretically Red Bull could continue to run Total in their engines but brand their cars with whatever label – such arrangements are not unknown in F1, WEC and WRC – but Mobil are likely to insist on their own oils in the tanks (and Esso in the cells) if their logos are on a car.

Also affected by these developments are Toro Rosso, for Red Bull's junior team have inked a deal with Renault for 2017, having used the French engines in 2014-15 before switching to old-specification Ferrari engines. Previously the Italian team had used Total products in their Renault engines – without commercial support, given the team's Spanish CEPSA backing – and the understanding was that the deal would continue.

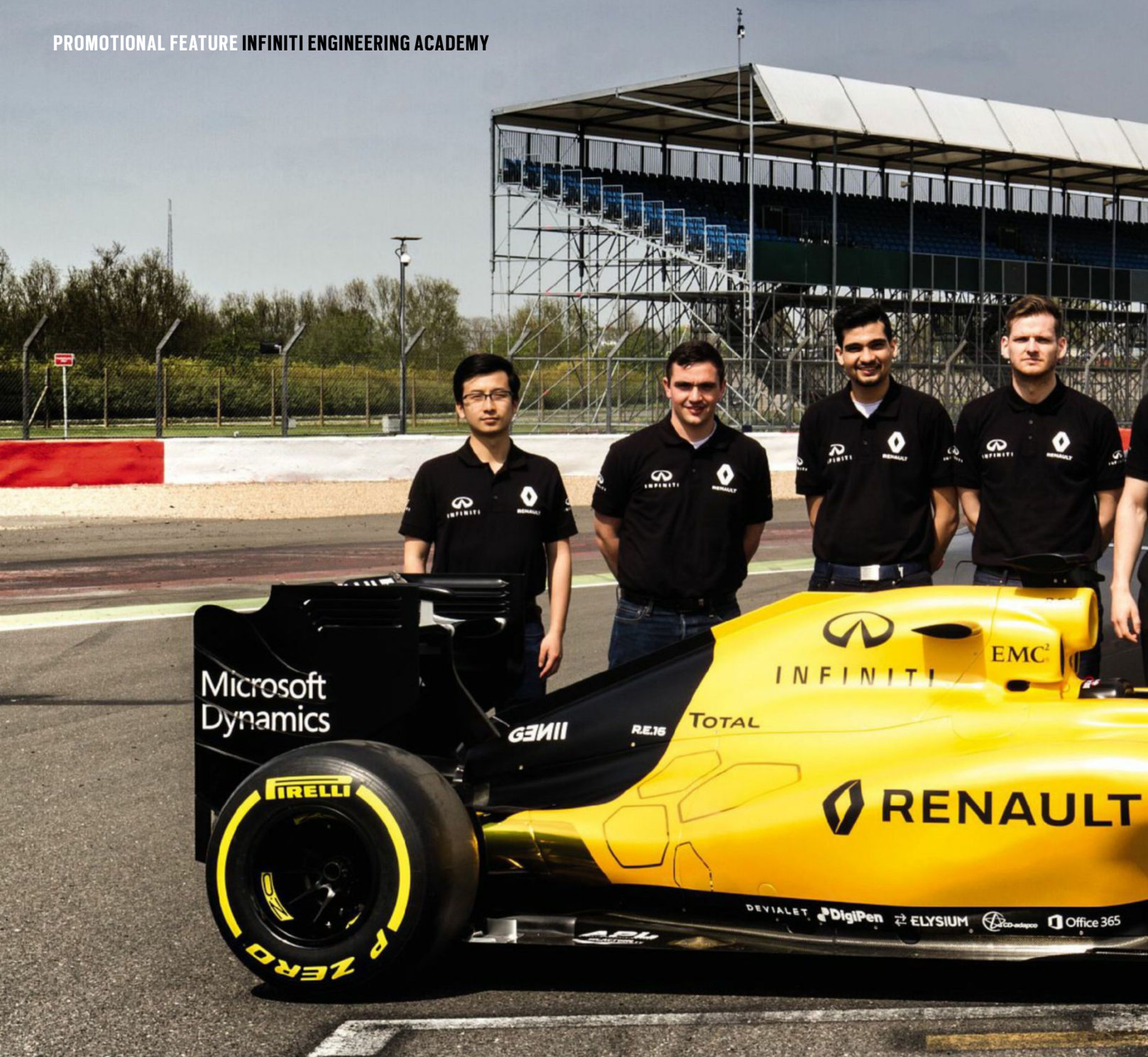
However, this is predicated upon Renault retaining Total's technical support. That team, too, could try to ink a deal elsewhere using the 'first-fill' carrot, but that would expose Red Bull to the full validation costs rather than amortising them over the two Red Bull-owned teams. Either way, the Renault source we spoke to was absolutely adamant that all costs would need to be carried by the customers. "We won't," he said.

All of which goes to show how kids kicking cans along the streets of Kinshasa slums as they dream of CAF glory can affect the activities of Formula 1 racing teams operating thousands of miles away in Viry-Châtillon, Milton Keynes and Woking. 🇫🇷

**Moving forwards, Total will provide technical support to Red Bull but no additional funding**



"Honda's underperformance is an issue... smoking Hondas do Mobil no favours"



# FAST TRACK TO THE FUTURE



There are few better ways to break into Formula 1 and top-level automotive engineering than the **INFINITI Engineering Academy**, as last year's graduates explain

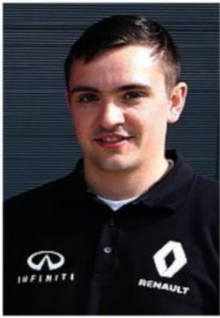
**F**ormula One remains an almost impossible dream, whether for drivers or engineers. But for the past three years, the INFINITI Engineering Academy (IEA) has been offering students from around the world a chance to gain a year's work experience inside INFINITI's technical centre, and at the HQ of its technical partner, the Renault Sport Formula One Team.

That partnership brings INFINITI's global brand and multiculturalism to the F1 team and supports Renault Sport Racing with a cultural

diversity that's much in evidence in the INFINITI Engineering Academy. Past winners have been selected from the United States, China, Russia, Saudi Arabia and the U.K.

They're offered an opportunity to gain what could be career-defining experience alongside some of the finest minds in top-level automotive engineering and motorsport. We caught up with 2015's winners, who have just completed their year-long experience at the Academy, via six months at INFINITI's European Technical Centre in Cranfield, then six months inside the Renault Sport Formula One Team's headquarters based in Enstone, Oxfordshire.

**Turn over to read about their IEA experiences →**



**ALEX  
ALLMANDINGER**  
US  
WINNER

Allmandinger, a student from the University of Illinois, got a great buzz from being able to interact with the Renault Sport

F1 drivers at the technical centre in Oxfordshire.

"I'm obviously into the technical stuff," he says, "but yeah, it was fun rubbing shoulders with the drivers, largely during the media days, but also around the factory. They kept popping in and we also saw them in the team gym. It was pretty cool working out with F1 drivers."

Alex also relished the opportunity to travel to F1 races as a spokesman of the programme. "I went to the Monaco Grand Prix, which was a dream come true. I spoke to journalists and represented the Academy. It was great to experience that side as well."

His placement brought further travel opportunities, such as a vehicle testing trip to the fastest roads in Europe. "In Germany we tested new vehicle technology on the autobahn," he says. "That was fantastic, really opening up these new vehicles in that environment."

Allmandinger reckons the length of the placement is fundamental to its success: "There's time to get involved and do meaningful work."



**ZITONG  
ZHANG**  
CHINESE  
WINNER

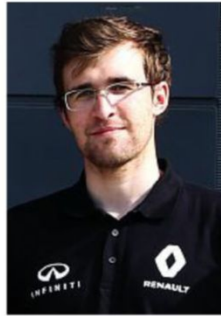
"It was great work - real team work," says Zitong Zhang from Tongji University, China's 2015 winner.

"I started supporting

wind noise testing at INFINITI pretty much the first week, then I was analysing wind tunnel data. I felt part of the team from the start, both at INFINITI and later at the Renault Sport F1 Team."

Zhang says one of the highlights was being sent by INFINITI to China to give a presentation on the programme to other Chinese students, alongside Bob Bell, Renault Sport's chief technical officer. But he reckons he learned just as much from being thrown together with the

other Academy participants - all five lived in a pair of shared apartments during their placement with INFINITI, and then shared a house while they worked with the F1 Team.



**ANDREI  
PLAKHOTNICHENKO**  
RUSSIAN  
WINNER

"INFINITI and Renault Sport Racing may have different goals but the way they approach challenges is the same," says Andrei

Plakhotnichenko from Moscow University, the Russian winner of a 2016 Academy place.

"There are some carry-overs from the vehicle dynamics for INFINITI's road cars to vehicle dynamics for F1 cars. It's all about physics and this is a constant in both industries."

But it's all about people, too, and he says of his fellow Academy students: "They are all really nice guys and we're still in contact. We talked about many things in each other's countries."



**USMAN  
ZAFAR**  
MIDDLE EASTERN  
WINNER

"Whether it's road cars or motorsport, design processes are similar," says Muhammad Usman Zafar from Alfaisal University in

Saudi Arabia. "It's about tackling problems and communicating with other engineers and designers to create the best performance."

Zafar stresses the importance of teamwork and communication in that process: "You come up with a draft design and then you go back to the chief designers and get feedback and then you go to aero or electronics for their feedback. You refine the design until it's approved by all departments and can be manufactured. Working at INFINITI we dealt with other departments every day and it was the same at Renault Sport: we learned to work in teams and communicate issues and challenges."

One of Zafar's designs made it onto the Renault F1 car, after Jolyon Palmer complained of poor cockpit visibility. Zafar met with Palmer, who

The 2015 winners during their six months together at the INFINITI Engineering Academy at Cranfield



## AND HERE'S A FIRST LOOK AT THE IEA CLASS OF 2016...

The seven winners of the 2016 INFINITI Engineering Academy have begun the first chapter in their careers. Chosen from more than 4000 applicants, they will start work in INFINITI engineering departments and with INFINITI's F1 partners, the Renault Sport Formula One team.

Those names for the future are: Caitlin Bunt (USA), 24; Felix Lamy (Canada), 21; Alexandros Palaiologos (Mexico), 23; Riccardo Manfredini (Europe), 24; Li Xuezi (China), 23; Shihab Solaiman (UAE), 23; Jaden Partridge (Asia-Oceania), 21.



explained he was having trouble seeing one of the wing-mirrors. “I designed a spacer to increase the mirror height,” says Zafar. “It was made a day later and in a week it was on the car.”



**DANIEL SANHAM**  
EUROPEAN WINNER

“Walking into INFINITI’s Technical Centre that first day, I wasn’t really nervous,” says Daniel Sanham, a third-year electrical

and electronic engineering degree student at the University of Nottingham. “I was just excited and eager to get started - and wondering whether I would get anything really significant to work on. I needn’t have worried - the Engineering Academy is treated very seriously by INFINITI.”

Daniel was immediately assigned a senior manager and a supervisor and put on a research project testing electrical systems in the new INFINITI Q30. “It was clear we were there to get some real experience at the highest levels of engineering,” he says. “Once I had familiarised myself with the vehicle’s systems, INFINITI sent me up to the factory in Sunderland where I set up electrical and electronic tests on cars coming straight off the production line.”

The Academy selects only those capable of getting involved and contributing to real solutions from day one. Sanham found himself creating testing solutions around the stop-start button at INFINITI and when he moved to the Renault team, his first project was making similar test solutions. Sanham’s skills were enough to earn him a job offer at Renault F1. “The IEA prepared me for the types of challenge I would face in Formula 1,” he said.

**AND YOU COULD BE NEXT!**

The INFINITI Engineering Academy continues to grow more global and diverse with each new intake. This year the programme will accept seven winners - drawn from the US, Canada, Mexico, Europe, China, the United Arab Emirates and Asia/Oceania. So for all aspiring engineers out there who have what it takes to thrive at the heart of Formula One and in the automotive sector, register your interest now at <https://academy.infiniti.com/register>. Applications for next year’s programme will open early in 2017.



If you think you have what it takes to make a success of the INFINITI Engineering Academy head to: <https://academy.infiniti.com/register>

With Liberty Media recently buying into the Formula One Group, and Chase Carey now installed as chairman, there has never been a more opportune moment to adapt grand prix racing to better suit a 21st-century audience. *F1 Racing* spoke to everyone, from fans to team bosses, to find out how we could make the world's greatest sport even greater

# BLUEPRINT FOR A NEW F1

**WORDS** JAMES ROBERTS  
**ILLUSTRATIONS** PETER GRUNDY

**When Liberty Media** looked at Formula 1 ahead of taking their recent \$8bn stake, what did they see? Certainly a proud, historic, endlessly enticing sport that has captivated millions since its inception in 1950. But they would also have seen a property in need

of a little attention. One with some serious internal political divisions and an on-track offering perhaps not best attuned to the needs of a digitally minded world.

Happily, millions of fans across the planet still thrill to see 22 heroes pilot fast, technologically

advanced machines in exotic locations around the globe. And at the sport's still-robust heart, its three main principals remain unchanged: that an F1 car should be the fastest racing car on any given circuit; that F1 should have the best drivers in the world; and that it

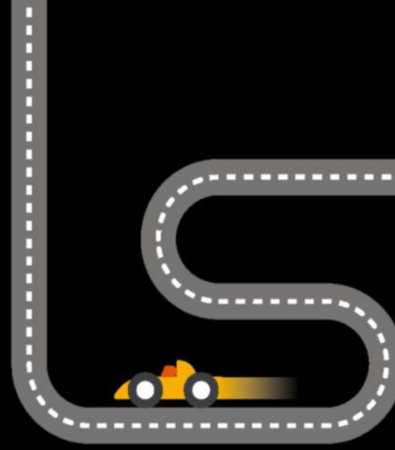
should blend technical excellence with sporting competition.

But how might it be made better? We've distilled the thoughts of fans, drivers, team bosses and paddock sages to assemble this 'top ten' list.

If you're reading, Mr Carey, we'd love to know what you think... →



F1 needs to be unpredictable

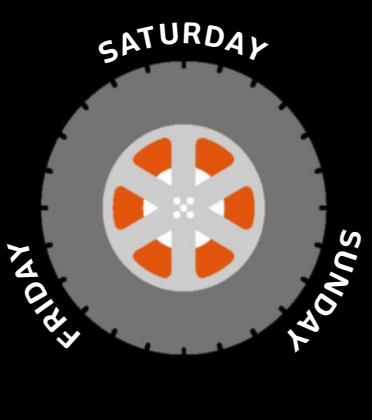
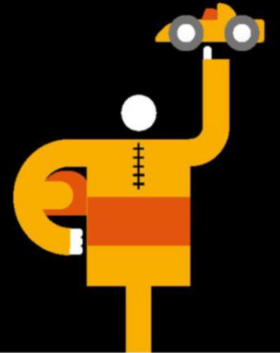


F1 cars should be fast and exciting

Make F1 more fan friendly



Use drivers to promote the sport

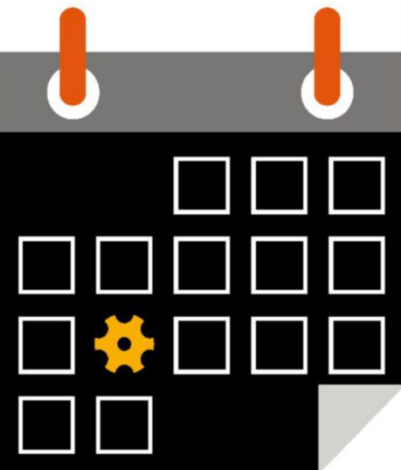


Shake up the format of a GP weekend

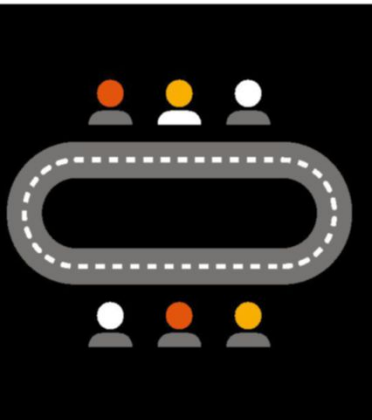
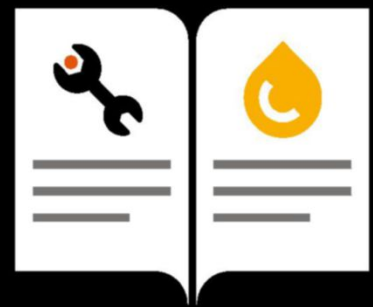


Improve the TV spectacle

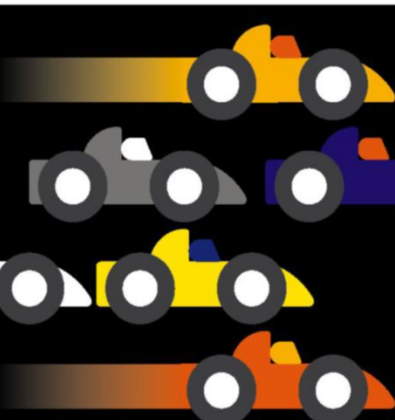
Tweak the calendar



Simplify the rulebook



Create an independent committee to run F1



Ensure F1 is financially viable for all

# 1. F1 NEEDS TO BE UNPREDICTABLE

Is F1 sport or entertainment? Or is it a blend of both? Which of these aspects is the more important?

Sport is at its most compelling when it's unpredictable. Giant-killing Leicester City in the English Premier League; Japan beating South Africa in the 2015 Rugby World Cup; and Max Verstappen winning the Spanish Grand Prix on his Red Bull debut.

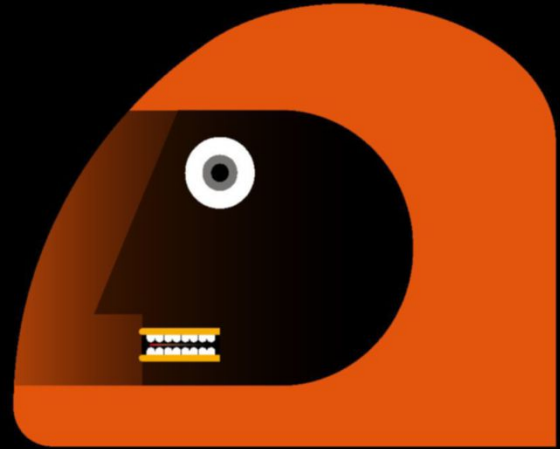
In recent decades, with the domination of Red Bull, Mercedes, and Ferrari, F1 has suffered from a lack of unpredictability – although intra-team rivalry between Lewis Hamilton and Nico Rosberg has at least offered a spice absent in Schumacher's all-conquering era between 2000 and 2004.

"If you ask me whether F1 is a sport or an entertainment," muses Williams' chief technical officer Pat Symonds, "I'd say it's actually both, and the key to improving it is how you blend the two."

"I contend that F1 would be a much better sport if you didn't turn up on a Thursday and ask: 'I wonder how much Mercedes are going to win by?' To achieve that goal you have to take away the ability to buy success. One way is a budget cap, but the controversial idea that works for me is handicapping."

Handicapping is used in sports such as horse racing and other motorsports, such as Touring Cars, as a way to reduce the advantage of the front-runners with a measure of equalisation – usually a weight penalty. The greater the success, the more weight is applied.

"There's nothing intrinsically wrong with it, we just don't do it," says Symonds. "And in GT3 racing, the equalisation is incredibly successful. You get a Bentley fighting a Ford GT or an Audi R8. A handicapping system would mix up the competition, giving us far greater unpredictability."



# 2. F1 CARS SHOULD BE FAST AND EXCITING

The sport's drivers should be celebrated as heroes for their bravery and skill. But watch an onboard lap today and it almost looks too easy. It's not always obvious when a car is out of line or right on the edge of adhesion. It appears *safe*.

This is partly due to the engineering compliancy of modern cars' suspension and downforce. It's also because the high torque of the current hybrid power units has enforced a delicacy of throttle control that dictates against 'full gas' in anything other than a straight line. What's more, a kid-gloves approach is required for the management of Pirelli rubber. These tyres quickly lose performance when subjected to repeated high lateral loading.

"I want to race cars that are difficult to drive," says one current driver, who asked to remain anonymous. "You watch

an onboard qualifying lap now, and never do you wince to yourself and say: 'Wow – look at the commitment through that corner!' Drivers are careful what they say publicly, but we are having to *underdrive* even in qualifying now because we are on the edge of damaging our front tyres on turn-in, or getting wheelspin on the rear tyres. In the races, it sometimes doesn't look like anyone is trying."

But it's not just about the speed. A Formula 1 car should be as fearsome as a fighter jet. It should beg to be driven right on the limit; its tyres should withstand this kind of abuse; engines should be extremely loud.

Fans watching trackside should have their senses assaulted by both the speed and fearsome quality of an F1 car. Sadly, the current hybrid F1 machines have lost their 'scary' attributes. Eighties turbos, anyone? *That's* what we're talking about.



### 3. MAKE F1 MORE FAN FRIENDLY

Formula 1 doesn't make life easy for its supporters. Whether it's high ticket prices, pay-per-view TV or restricted paddock access, being an F1 fan requires commitment, dedication and deep pockets.

So why not have tiered paddock access that lets die-hards get right up close to the action? Pitlane walkabouts should happen daily over a race weekend, along with driver autograph sessions – which should last for a minimum of 45 minutes every day. If that seems excessive, note that the autograph session prior to the Le Mans 24 Hours goes on for 75 minutes.

In Suzuka last month, Lewis Hamilton irked members of the press by walking out of a media session, but what was not widely reported was that prior to that he'd spent time with the public, taking part in a fan forum Q&A behind the main grandstand. This is exactly the sort of thing that F1 needs more of.

While we're at it, let's free up reporting from the circuit. Current licence restrictions mean no broadcasts of any kind are allowed, except by TV companies who have paid for the privilege.

This prevents 'quickie' iPhone interviews from journalists quizzing drivers, or team Facebook or Snapchat feeds from the motorhome. Younger fans, used to instant, free gratification, don't put up with such stuffiness. And if they're not inclined to watch television for two hours on a Sunday afternoon, getting their attention through social media is of paramount importance.

Spectators used to be able to rent 'Kangaroo TV' handsets that let them watch on-board video and listen to live commentary, and it would be good to see these return. TV viewers would also benefit from free-to-air broadcasts with paid-for additional coverage.



### 4. USE DRIVERS TO PROMOTE THE SPORT

Not so long ago, drivers would finish a grand prix weekend and then return to their cockpits a few days later for testing; they were constantly at work. Today, they have it written into their contracts that they will make only the bare minimum of PR appearances. Some even dictate that these must take place within a given distance from the confines of a grand prix circuit.

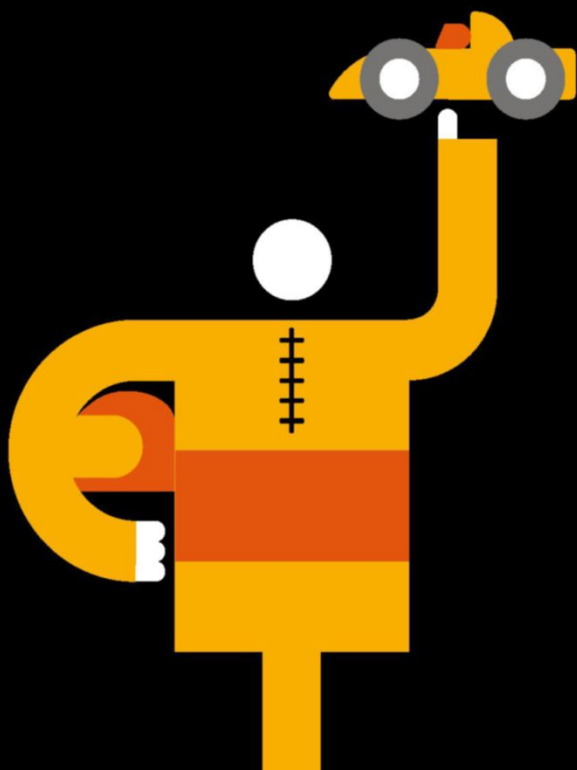
But reduced in-season testing means that drivers should be utilised more. Not only by their team's own sponsors, but also by the sport itself for the purposes of helping to promote Formula 1.

Prior to the US GP, Lewis Hamilton made two high-profile PR appearances. The first was as a guest on *Ellen*, one of the most viewed daily chat shows in the USA. As a guide to the show's popularity, compare Hamilton's 3.8million Twitter followers with Ellen DeGeneres' 63million.

Lewis also revealed that he'll have a cameo role in the latest *Call of Duty* shoot-'em-up computer game, a franchise that has generated tens of billions of dollars in revenue from its popularity. These are both good examples of drivers putting in the hours to help push awareness of the sport to a greater audience.

"I've been shocked when I've landed at various airports over the years, because you would never know a grand prix was about to take place in that country," says Toro Rosso team principal Franz Tost.

"I would hope that the new owners will be sure to take care of promotional activities before a race weekend. We should get the drivers into the nearest city the week of the race, get them performing demo runs and have them making public appearances. Drivers don't do anything like that any more and for the money they are paid, they *should* be doing these things." →



## 5. SHAKE UP THE FORMAT OF A GP WEEKEND

Formula 1's race weekend schedules are tried and tested, but they are, perhaps, now getting a little staid. Night races and dusk formats in Singapore and Abu Dhabi have added an interesting twist to proceedings, but that's not enough. Fans want as much F1 track action as they can get.

Jenson Button spoke recently about introducing shorter races, so why not have a 'sprint' event as well as the grand prix proper? Or consider the idea mooted by *F1 Racing* reader Daniel Stafford, that: "Fridays should be used as extended test days for both racers and young drivers, excluded from engine and tyre restrictions."

He adds: "There should also be as much action on Saturdays and Sundays as possible, and more opportunities for fans to get up close to F1 machinery, much like what BMW did with their 'fan experiences' a few years ago."

With a 9am-5pm Friday test day, Saturdays could be crammed with support races, such as (renamed) Formula 2 and Formula 3 events, as well as a national touring car series.

Sunday could see the appearance of a display that was a huge draw at the Austrian GP last year: veteran racers in classic F1 machinery.

That could be followed by driver presentations on the grid, with each one introduced to the crowd with true NASCAR-style pageantry. Every single driver must then speak to the TV crews – no one would be allowed to slope off back to their garages to hide.

And as one high-profile team source told *F1 Racing*, every aspect of the show should be rethought, including the post-race presentations: "What relevance does Bizet's 19th century opera have to the high-tech modern sport of Formula 1? We *must* ditch that awful podium music..."



## 6. IMPROVE THE TV SPECTACLE

The move away from free-to-air broadcasting to pay-TV is likely to reduce the exposure of Formula 1, and that's a very worrying trend for a sport that wants to remain a global player.

Rather than simply pulling in big bucks from TV giants (who pass these costs on to fans, via subscription fees), a better approach would be to charge the die-hards for the ability to stream or download additional content to a second screen or tablet, while the main, 'standard' offering of a live race feed, with commentary, remains free.

So fans who want to watch an entire race from the on-board perspective of their favourite driver, with access to an open pit-to-car radio channel for the entire race, would have to pay, say, £5 for the privilege. But the less committed, who simply want a straight view of the action, still get that for free.

Consider it an essential element of F1's (self-) promotional budget.

Filming of races should also be improved so camera positions convey the speed of the cars. Currently, the focus seems to be mainly on the large advertising banners displayed around the track.

Teams have a vital role to play in an improved TV offering. They should be less restrictive, offering more access to drivers and personnel. "At the Indy 500, you can stick a microphone in an engineer's face ten laps before race end and ask them about strategy," says Karun Chandhok, who has swapped racing for a reporter's role at Channel 4. "Try and do that in F1 and you have no chance."

"The show needs to be better for the fans. We should be able to talk to more people in the sport. Ferrari's team principal Maurizio Arrivabene hasn't spoken to Channel 4 all year. Why not?"



## 7. TWEAK THE CALENDAR

There's no argument that the 'classic' F1 venues of Monaco, Silverstone, Spa and Monza, should be enshrined. But while we're at it, let's make sure the French and German GPs return for good.

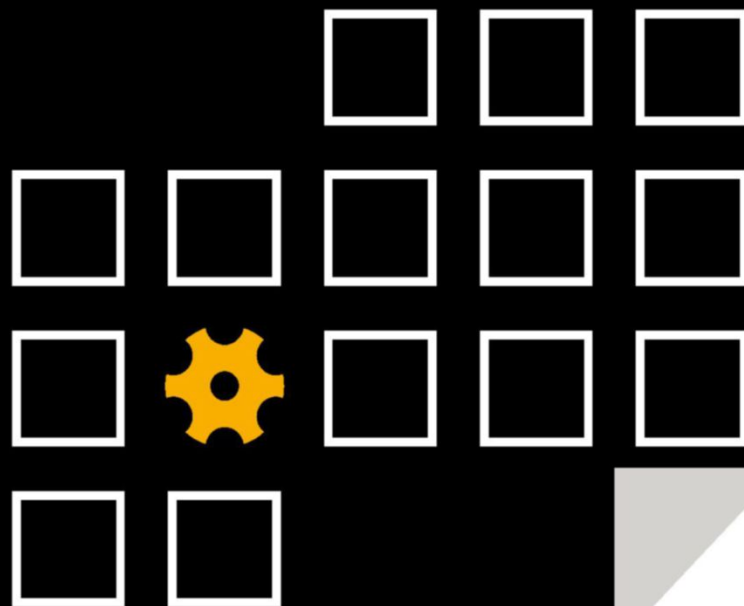
Few can resist the presence of the USA, Japan and Australia on a 'world championship' calendar. But what about a return for magical Imola, Zandvoort (hello, Max Verstappen fans), Estoril and particularly Kyalami? In any truly global series there should be a race on the African continent.

"F1 is an international sport, so we should look at regionalising the championship for certain parts of the year," suggests Pirelli's motorsport director, Paul Hembery. We could have Asian, European, Middle Eastern or American championships, where we group the races together. That lets the local television audiences watch races at a time convenient for them.

"It would also build up interest and awareness of Formula 1 in places where, at the moment, it doesn't get very much exposure. You could have six or seven races where a particular region would experience a taste of Formula 1. You might have races in Singapore, Malaysia, China, Australia, South Korea and Japan, then events in Abu Dhabi, India, Bahrain, Turkey, Baku and Sochi, and then a European season and an American season – and so on."

Most in F1 would agree that the sport would benefit from more races in the US; just imagine how cool it would be to have that much-longed-for New York street race.

But 21 grands prix is perhaps four too many for one series, especially since races in a particular region are never grouped together sensibly. This just puts added strain on those weary economy travellers and their families.



## 8. SIMPLIFY THE RULEBOOK

The cost of building and transporting two Formula 1 cars and associated personnel to 21 races a year, averages out at a cost of around £1.25million a week. So on a budget of, say, £65million a year, a team can compete in the Formula 1 world championship. Any money spent on top of that is used to develop the car.

"So if you have a budget of £70million, that leaves £5million to spend on development," says Williams' Pat Symonds. "If a team has a budget of £75million, then while it doesn't sound like a lot more, they actually have twice as much money to develop the car."

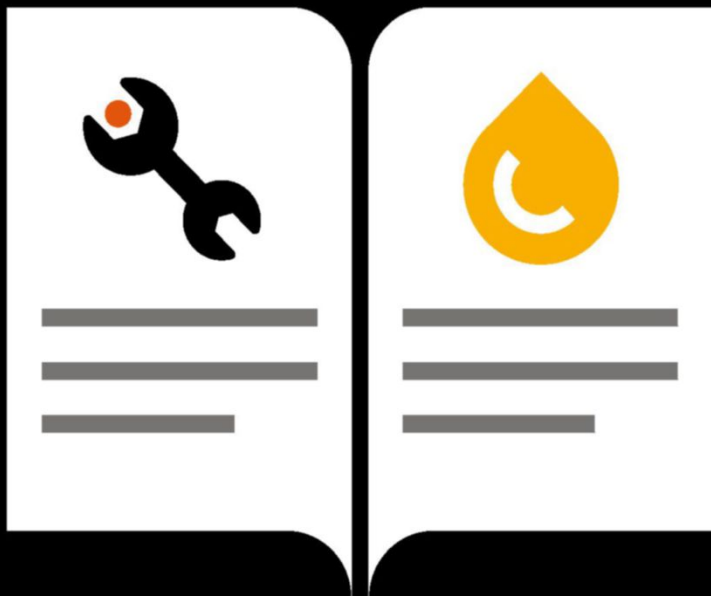
"Because we are very tightly regulated, so much comes down to attention to detail – and that's very expensive. When the rules were more relaxed, it came down to creativity and lateral thinking. Good ideas cost nothing. But now you have a whole team of people

studying tyres, hundreds of people on aerodynamics and this is where it has got very expensive."

As the rules have become increasingly detailed, so they have required greater clarification to avoid loopholes, and the rulebook has grown out of control. The trouble is, as FIA race director Charlie Whiting succinctly notes: "You can't un-invent things."

But the ever greater need for detail and precision has led the sport down cul-de-sacs that it can't escape, such as the apparently nonsensical grid penalties for power unit and gearbox changes.

And next year, a new set of regulations is coming in that will dramatically increase aero and speeds, but at the risk of damaging the wheel-to-wheel racing. It will require bold leadership to rethink the rules from scratch and to create a championship that has a clear set of goals. →



## 9. CREATE AN INDEPENDENT COMMITTEE TO RUN F1

Teams already have a strong say in the direction and rule-making process of Formula 1, which means the off-track political battles are often fought out as bitterly as the battles on track. The result? Ideas for the common good are lost in the fog of war.

A different approach to this problem, would be to start at the top of the tree, with an overall boss who makes the final decisions. This could be Chase Carey, or a new F1 CEO if one is appointed.

Below them would be three sub-committees, each one comprising four or five people, under the headings of 'technical', 'sporting' and 'marketing'. Each member of each sub-committee would be an individual with no affiliation to any current team, but they would have extensive previous experience of Formula 1.

So, for example, a technical group could be made up of the

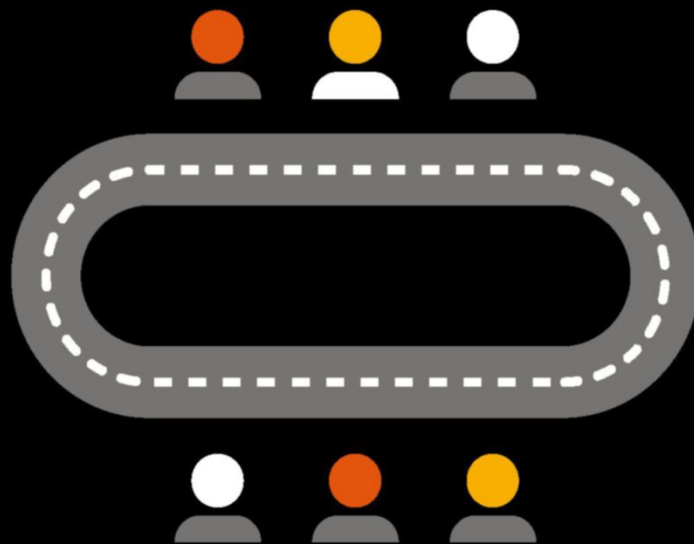
following: Ross Brawn, Patrick Head, Paolo Martinelli (engines) and Kees van der Grint (tyres).

With some central funding, the three groups could write a better rulebook, devise a better sporting structure, and improve both governance and day-to-day operations. That way, Formula 1 would be liberated from at least some of the in-fighting that prevails between the two factions trying to run it today: FOM and the FIA.

"The Overtaking Working Group from some years ago was like a college project," says Pat Symonds. "It was poorly funded and low-tech, but imagine what we could achieve with proper investment."

A further detailed, fan-friendly point: no more engineers' acronyms such as 'DRS' and 'PUs'. We'll have 'speed wings' and 'engines' thanks very much.

Let's give the TV commentators a fighting chance!



## 10. ENSURE F1 IS FINANCIALLY VIABLE FOR ALL

F1 is a curious sport to 'own', since 'ownership' does not extend to cars or the circuits. Nonetheless, the Formula One Group has a duty to ensure its participants can afford to participate.


That's likely to mean reducing hosting fees levied on circuits. These have risen so high that many classic grands prix, such as the German and French, simply can't afford to remain in the sport.

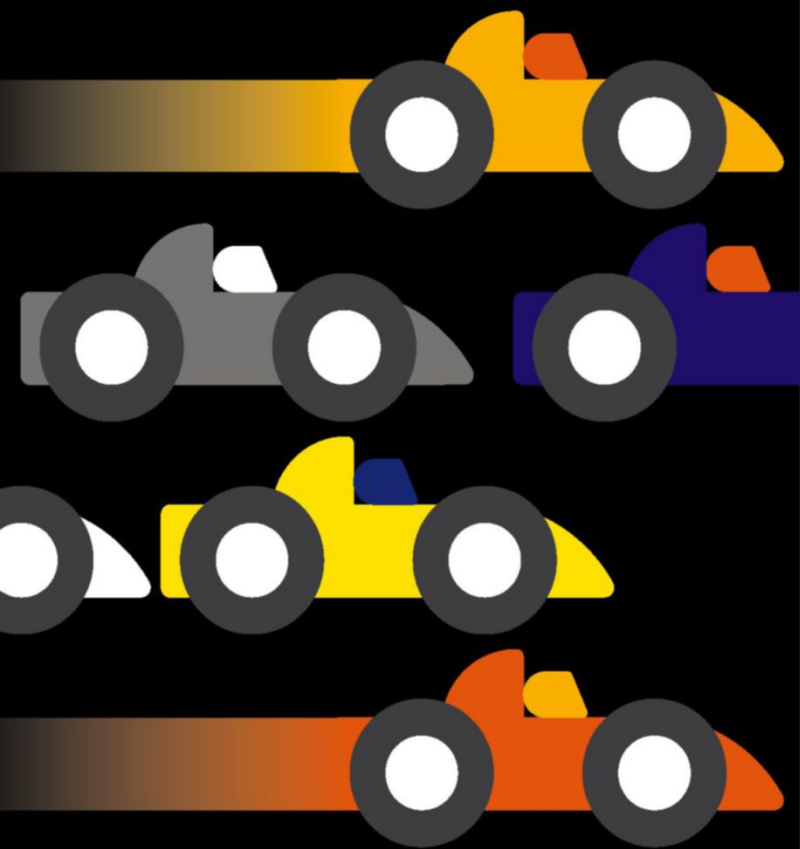
State-backed grands prix such as more recent additions in Malaysia, Singapore, Bahrain, Abu Dhabi and Baku have started to pull races away from F1's traditional heartland. A sliding tariff of fees that helps protect the classics should be introduced quickly.

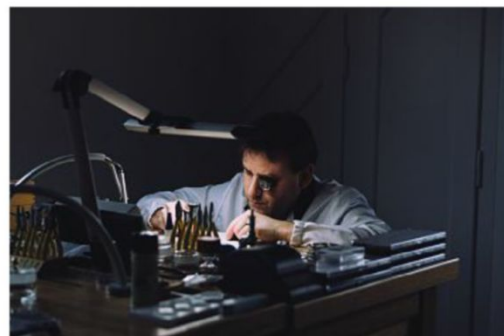
Meanwhile, F1's smaller teams continue to struggle to survive. When even a relative minnow, such as Manor, has around 150 staff and a budget of approximately £60m for a season, it's clear that

F1's costs have become grotesquely inflated. The barrier to entry for new teams is simply too high, and it takes only one or two teams to wobble for Formula 1 to look very shaky – as was the case in Melbourne 2015, when only 17 cars made it onto the grid.



Fairer redistribution of revenues and some form of spending restriction would mean teams at the tail of the field would no longer need to hire pay drivers to help with their budgetary shortfall. And that would ultimately improve the quality of the field.

"Some teams are spending £260million for two guys to race each other on a Sunday afternoon, and that's too much," says Toro Rosso's Franz Tost. "We can do it for much less. First we must address the financial distribution of income to make it fairer and then introduce a cost cap and look at using more standardised parts." 





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# AUSSIE'S AUSTIN ASTON

Even F1 drivers can get stuck in a loop of airport-hotel-circuit, during a frantic 21-race schedule. So to break things up, *F1 Racing* wangled **Dan Ricciardo** a rather special set of wheels for his rush-hour commute to the US GP...

**WORDS** CHRIS MEDLAND  
**PICTURES** STEVEN TEE/LAT



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BRIM CH

## IT'S THE MORNING AFTER THE NIGHT BEFORE

and Daniel Ricciardo, meeting *F1 Racing* for an early-morning appointment, is a little... croaky.

He steps out from the lobby of Austin's swish downtown 'W' hotel, perky as ever in team kit and black shorts, but when he opens his mouth to speak, he's more than a little hoarse.

But lest you imagine, dear reader, that Dan, a fun-loving kind of chap, has been enjoying some of the city's famously enticing after-hours delights, the truth is somewhat more mundane.

"I've kind of lost my voice," he rasps. "From Tokyo, I went back to use the simulator in the UK, then from the simulator we flew to France to go and see Renault for a day, and then out to America. You're just constantly dealing with big time differences."

Still, we have a little something to cheer him up on this fast-warming Texas morning. Yep, a 200-grand V12 Aston Martin Vanquish sits moody and black as midnight, at the kerb. Many are the perks of being an F1 driver – a team association with one of the most evocative British sportscar brands being one of them. Dan has driven plenty of the sponsor's product this year of course, but there's still a flash of the famous Ricciardo pearly-whites as he steps towards his near-600bhp chariot.

*F1 Racing*, meantime, is causing a bit of a kerfuffle for the hard-pressed parking valets, since Dan won't be driving alone today: there's also a BMW Z4 camera car for photographer Steven Tee (all the better for roof-down, car-to-car shots), while Dan's trainer and confidante, Stu Smith, along with the assembled Red Bull PR crew, will tail us in a rental car so anonymous no one can even recall what it was.

We begin with the roof down, but Dan, noticing the strong wind whistling down Lavaca Street, immediately asks for it to be raised again.

Besides, when a car has this much presence, it need draw no more attention to itself. So it's in roof-up 'stealth' mode that we head downtown, en route to the Circuit of The Americas.

Dan is gentle with the throttle to begin with, moving off with a muted rumble, not a blast, although the latent intent of that V12 is still enough to stir exhaust reverb from the high-rise blocks that spread either side of Congress Avenue to the north of the Colorado River.

"A nice car does feel good," says Ricciardo, inhaling the aroma of the extremely costly black leather that trims almost every tactile surface of the Vanquish cockpit.

"An F1 car is so different anyway to anything you drive on the road, that I hop in a road car and I'm immediately not in F1 mode, so it is nice to have a cool sportscar."

F1 Thursdays are among the more relaxed days of a grand prix weekend. There are no track duties, just media calls, and Dan is clearly enjoying the chance to tune in to the addictively freewheeling Austin vibe: "I love this city," he beams. "It's nice and clean as well. Just a good place... It's so cool, I love it."

Indeed so, for as Formula 1 destination cities go, Austin is right up there among the favourites of the travelling circus.

Rush-hour congestion slows our progress out of town, but soon enough we reach Rainey Street, where the identikit architecture of a US business district changes in a flash to something authentically Austin.

Clapboard bungalows, some converted into bars and barbecues, line the route; Dan's loving the change of scenery. "Been to the Iron Works?" he asks as we pass one such establishment.

"I went on Monday night – I hadn't been before. It was good. Did the trick, quick and easy. The brisket I really liked..."

"And Clive Bar, when it's going, is really good. They just don't play as much live music as they used to, but when they do, in the backyard, it's fucking cool." →



"AN F1 CAR IS SO DIFFERENT TO ANYTHING YOU DRIVE ON THE ROAD, THAT I HOP IN A ROAD CAR AND I'M IMMEDIATELY NOT IN F1 MODE"

Ricciardo admires the luxurious, leather-lined interior of the Aston Martin Vanquish, before setting off to put it through its paces along the streets of Austin



Making tracks, with the high-rise landscape of the downtown district giving way to the old-school charm of the diners of East Austin



Ricciardo is namechecking venue after venue with genuine enthusiasm for the city. Racing drivers, it seems, like to get their kicks just the same as the rest of us.

His good mood is, of course, to be expected. Just a few weeks ago, he finally got the monkey off his back for 2016, with that stirring Malaysian Grand Prix victory in Sepang. And, over the course of this season, the Red Bull RB12 has been proving itself to be an increasingly competitive proposition.

We get chatting, though, about some of the activities with which Red Bull keep him busy off-track. The day before, Ricciardo was out at a ranch some 120 miles south of the city, filming for Red Bull. And an early meet-and-greet began his Wednesday. "There's stuff that I really enjoy about Red Bull," he says. "A lot of the time, sure, some things you *have* to do, but a lot of the time they actually ask you first. They're like: 'Hey, we're thinking of doing this in Austin or Japan, what do you think?'"

"Sometimes you get a bit of a choice and an opinion; that's cool. They try to make it fun because they have quite a few days with us as well, so I think they appreciate and respect that it's a lot easier to get through if we enjoy it."

This brings us neatly back to the Vanquish, which, let's face it, is by no means a shabby mode of transport for a trip to the circuit.

Dan decides to put those 12 cylinders to good use as we pull away from an East Austin diner after a pause for photos. The rears light up, the Vanquish snakes from side to side for a few moments – but all is held in check by fingertip touches on the wheel. There's that trademark smile again...

"He liked that!" Ricciardo says as *F1 Racing's* cameraman laughs, having just missed the shot. "I mean, I could do it again...?"

We cruise along East Cesar Chavez Street and Ricciardo is in his element. His eye is caught by sign after sign advertising food, drink and even 'Gluten-Free Piercings'.

One of the coolest men in F1 has two hands perched on the top of the steering wheel, with his nose almost pressed against the windscreen as he surveys his surroundings.

"This is cool!" he enthuses. "I'm actually really glad I'm getting a bit of a tour. This is the shit I



really like. Stuff that you don't get just anywhere. Off the beaten track a bit.

"We had tacos the other night from a food truck. Three dollars for massive tacos and they were the best tacos I've ever had. That's so fucking cool. It was a Mexican dude in his food truck making them – it was great.

"I've been over here a lot more lately. I love it because, for me, I buy into all the American stuff basically. But this is different, isn't it? It's got character. Like, for me, I really like the city because it's cool without trying to be cool. Everything's just authentic and it works. It's pretty badass."

Ricciardo, unintentionally, but ever so aptly, has just described himself and as he upshifts onto the freeway towards COTA, he's still eagerly pointing out all sorts of sights: "Even just to go into a general store would be so fun just to see what's in there."

In a sport often guilty of taking itself too seriously, Ricciardo is a welcome antidote, happy to lighten the mood whenever he can. "I think I sort of take it for what it is now," he reflects. "Even when it's stuff that's supposed to be real serious or really not fun I try to make it fun anyway or put a light spin on it. Red Bull are pretty good like that. They're not too regimented with a lot of their stuff. I think they let us have fun for the most part." →

"I REALLY LIKE THE CITY BECAUSE IT'S COOL WITHOUT TRYING TO BE COOL. EVERYTHING'S JUST AUTHENTIC AND IT WORKS. IT'S PRETTY BADASS"

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6.0-litre, AM29 quad  
overhead cam 48v V12  
568bhp  
8-speed Touchtronic III  
automatic  
1,739kg  
3.6s  
201mph



**Engine** 1.6-litre Red Bull Tag Heuer  
24v turbo 90° V6  
**Power** 850bhp (approx)  
**Gearbox** 8-speed hydraulic for  
power shift and clutch  
**Weight** 702kg (including driver)  
**0-60** 1.9s (approx)  
**Top speed** 211mph

### Tale of the tape

The Aston Martin V12 Vanquish  
vs The Red Bull RB12



He reveals a healthy sense of perspective about a sometimes introspective community as he notes: "I love it, but I wouldn't say I'm a real nerd or a real enthusiast. I've got other interests as well, which is good because Formula 1 is so consuming that I think you need other interests just to get your mind away from it. Otherwise you just become too caught up in it."

"Obviously," he continues exuberantly, "racing has been the biggest part of my life, but I wouldn't say I'm like many of the other guys. Even like mechanically, I'm not very mechanically minded. I couldn't really tell you much about an F1 car!"

Still, he knows what to do with a steering wheel and pedals, and as we pass beneath the vast concrete flyovers that, on Sunday, will carry in race fans from all over Texas, he's in

a playful mood. Approaching the circuit entrance he realizes he's missed a turn. No worries, it's the perfect excuse for a quick 180° and another attempt to smoke the rears. The V12 roars, but – oops – some drama is missing.

"Should have had first gear," Dan laughs. "Shocker! It's a bit flat in second."

Ricciardo's demeanour, by contrast, has seldom been flat since he made his F1 debut, aged 22, with HRT at the 2011 British Grand Prix. He rose through the infamous up-or-out proving ground of Toro Rosso, before making the grade with Red Bull in 2014, where three wins and a Sebastian Vettel-shading performance marked him out as an emerging superstar.

The pressure on drivers in the Red Bull programme is immense, but Ricciardo seems to have had little trouble remaining true to himself

over the past few years as he has progressed to become an established name.

"I wouldn't say it's been difficult," he muses, "but then again I think I've had good people around me which makes it a lot easier."

"Sometimes you can get caught up in it and maybe you don't realise actually: 'Oh, shit, I'm acting like a dickhead. Maybe I should just bring it back a little bit.' I think if you've got good people around you they can always keep you within that and then I think if you recognise it you won't do it again and you'll be sensible."

We park up with a final blip of the throttle, and it's hard not to think that being sensible somehow just doesn't sound right for Ricciardo. Just as Formula 1 loves Austin because it 'keeps it weird', it's for the same reason that Formula 1 loves Daniel Ricciardo. 📍

"I WOULDN'T SAY I'M LIKE MANY OF THE OTHER GUYS. I'M NOT VERY MECHANICALLY MINDED. I COULDN'T REALLY TELL YOU MUCH ABOUT AN F1 CAR!"

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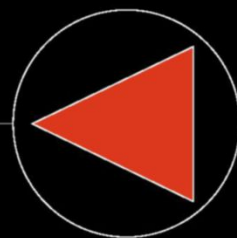
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True model size in mm and inches

# Now that was a car



## No. 56: The BRM P153

A distinctively shaped car that briefly returned BRM to the winner's circle



### BRM P153 TECH SPEC

<b>Chassis</b>	Aluminium monocoque with fully stressed engine
<b>Suspension</b>	Front: double wishbones, coil springs over dampers, anti-roll bar Rear: lower wishbones, top link, twin-radius rods, coil springs over dampers
<b>Engine</b>	BRM P142 60° V12
<b>Engine capacity</b>	2,998cc
<b>Power output</b>	425bhp
<b>Gearbox</b>	BRM P151 5-speed manual
<b>Tyres</b>	Dunlop
<b>Weight</b>	535kg
<b>Wheelbase</b>	2,440mm
<b>Notable drivers</b>	Pedro Rodríguez, Jackie Oliver, George Eaton, Jo Siffert, Howden Ganley, Helmut Marko

WORDS STEWART WILLIAMS PICTURES JAMES MANN

**For four years in the 1960s**, British Racing Motors (BRM) were among the leading lights of F1. Double title winners in 1962, thanks to Graham Hill, and second in both drivers' and constructors' championships for the next three years, the Lincolnshire-based team vied with Lotus for domination of the sport. But then, after a solitary win in 1966, the drought set in.

At the end of 1969, BRM's owner, Louis Stanley, decided change was required and appointed Tony Southgate as chief designer, which prompted Tony Rudd to leave and join Lotus. BRM's main problem when the new 3.0-litre era began in 1966, had been their uncompetitive H16 engine. They switched to a V12 for 1968, but while they worked on its development they began to slip behind – the rest of the field having already turned their attention to aerodynamics.

Luckily the V12 was light and compact, albeit a little too compact for Southgate, who felt its size added to the car's reliability troubles. He focused on the car itself, starting with a clean-sheet design. The result was four feet wide at its widest point, with a low-slung, almost squat appearance, while its 'coke bottle' shape, with a double curvature monocoque, gave it, in Southgate's view "a pregnant look".

This was a definite deviation from previous models, and allowed him to house the rubber fuel tanks in the flanks of the car. This, in turn, was crucial to his philosophy of a low centre of gravity, with the fuel tanks centralised to ensure minimal interference with weight

distribution as the load lightened. The suspension was conventional, with double wishbones at the front and reversed lower wishbones at the rear, but, unusually, the car ran on 13-inch wheels all round with fat Dunlop tyres used at the rear.

A full-size P153 was tested in MIRA's windtunnel, before three BRMs, clad in the livery of new title sponsor Yardley, lined up for the season-opener at Kyalami. Pedro Rodríguez, a works BRM driver in 1968, had returned from Ferrari to replace John Surtees as number one driver, with Jackie Oliver retained in the second seat. George Eaton, meanwhile, ran most of the season in a third Owen Racing Organisation/Yardley P153. There had already been teething troubles, with a rear axle breaking during testing, plus issues with the engine-oil systems. Oliver qualified 12th, four places ahead of Rodríguez, but Rodríguez finished ninth when Oliver retired with a gearbox problem.

The pair put in a stronger qualifying performance at Jarama, when they lined up fifth and tenth, but the race itself was a disaster. Oliver collided with Jacky Ickx's Ferrari on the first lap, and while both drivers escaped with only minor injuries, their cars were completely destroyed in the ensuing blaze. Because Oliver had reported an axle failure as the reason for the crash, Rodríguez was subsequently called in by his team, and withdrawn from the race.

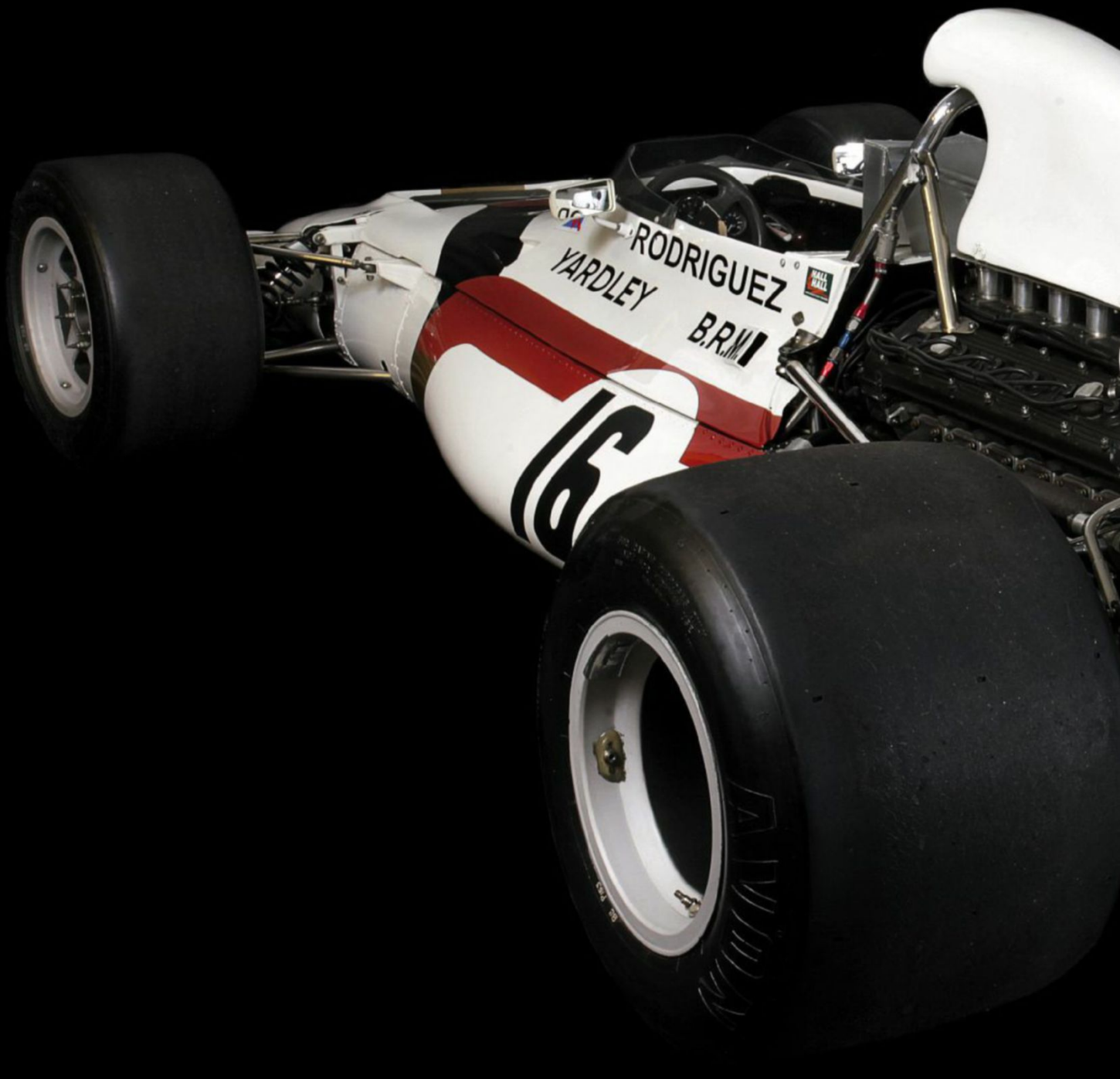
Points were finally scored at the third race in Monaco. This was something of a surprise, since the track didn't really suit the power →



**BRM P153  
RACE RECORD**



Starts	45
Did not qualify/withdrew	5
Retirements/not classified	24
Wins	1
Poles	0
Fastest laps	0
Other podiums	1
Points	25



of the V12, and Rodríguez duly qualified a lowly 15th. But as those ahead of him retired, he clung on to finish sixth.

The next race was the Belgian Grand Prix at Spa. With its 8.7 miles of long straights and relatively few slow corners, this was a track that *did* favour the BRM's V12 grunt. Rodríguez qualified sixth and had climbed into the lead by lap 5 of 28. But Chris Amon, in the new March, had been the early pacesetter and was not about to give up without a fight. He battled his way back into the lead on lap 8, only for Rodríguez to jump ahead of him again at the end of the next lap.

What followed was a titanic effort by Amon to harry Rodríguez into making a mistake and nudge the BRM into a failure. The gap between the two fluctuated between 0.8 and 2.5 seconds, but Rodríguez was under constant pressure from Amon, who set a new lap record as he tried desperately to claim his first victory. Neither car nor driver succumbed, and Rodríguez made it to the end 1.1s clear of Amon. Rodríguez claimed his second and final F1 win, having achieved what was then the fastest average speed ever recorded in an F1 race at 149.49mph. This was the last race held on the old Spa layout, the last F1 win by a Mexican driver and the final win on Dunlop tyres.

Tenth in Holland for Rodríguez and three consecutive retirements underlined the fragility of the P153, but it was performing much more reliably as the season came to a close. There were points for both Rodríguez and Oliver in Austria, and a fourth-place

finish in Canada for Rodríguez was followed by what should have been a victory at the US GP at Watkins Glen. Rodríguez's BRM was a safe second when, on lap 83, race leader Jackie Stewart retired his Tyrrell with an oil leak. Now 20 seconds clear of Emerson Fittipaldi's Lotus, a second win was on the cards until, with only seven of the 108 laps left, the P153 coasted into the pits having run out of fuel. BRM hastily refilled its tanks and Rodríguez rejoined the race, still in second – but now almost 40 seconds behind Fittipaldi. His chance had passed.

The final competitive outing for the P153 was at Mexico City, on the circuit named after Pedro Rodríguez and his brother Ricardo. It was the last race of 1970, and the home hero at least gave the car a decent send-off with a sixth-place finish.

Southgate had been sufficiently encouraged by the P153 to use it as the basis for the 1971 car, the P160. This went on to win twice, in the hands of Jo Siffert and Peter Gethin, following the tragic death of Rodríguez in a sportscar race in July. Howden Ganley and Helmut Marko campaigned a P153 as a third Yardley entry in 1971, but by then the car had had its day, and never managed better than seventh. BRM took their final F1 win at the 1972 Monaco Grand Prix, with a P160B driven by Jean-Pierre Beltoise.

The P153 and its successors had propelled BRM back into the big time. But while the return to glory was short-lived, the thrill of Rodríguez's nail-biting Spa antics will live long in F1 lore. ■



NEXT MONTH THE LOTUS E21



# BACK ON TRACK

**It's a fair assumption that** Jost Capito, 57, is probably McLaren's first ever chief executive officer to have raced a lorry from the Parisian suburbs to the coast of Senegal.

He won, naturally.

When he stepped aboard a Sahara-bound Mercedes-Benz 1936 AK in Versailles back in January 1985, German Capito, then 26, had no idea his road would lead him here. 'Here' being "the biggest challenge in global motorsport".

His words.

Having left his position as Volkswagen Motorsport director at the end of August 2016, Capito was bound for Woking and his second term in Formula 1, having previously served as COO at Sauber between 1998 and 2001.

Educated in engineering, Capito has stuck to the performance side of road cars and motorsport during his 30-year career. BMW, Porsche and Sauber Petronas Engineering all feature on his CV ahead of his first full-time move to F1. During his three years with Sauber, he worked with Jean Alesi, Johnny Herbert and, of course, from 2001, Kimi Räikkönen. But he turned his back on racing to join Ford as director of special vehicle engineering for an 11-year stint. During that time Capito's team won back-to-back World Rally Championship titles, before he was moved further upstairs to become Ford's director of global performance vehicles. Racing, however, is what Capito is all about.

Before the big business, he was a two-time German Junior Enduro champion. And to this day, he's rarely happier than when riding a big bike across even bigger terrain. Moving to Volkswagen in 2012, one of his stipulations was the stationing of a Ducati off-road bike in the service park. Not content with listening to the drivers on the radio and watching split times, Capito wanted to see things for himself. He'd get on his bike and ride out to watch among the fans.

'Hands-on' is about right for Capito. And that goes beyond his warmth in greeting every team member each morning. It goes to the heart of a management style that broke new ground in its holistic approach to the World Rally Championship. Capito stepped from top-level technical debate with the sport's governing body to placating a disillusioned – to the point of leaving the sport – Sébastien Ogier, via selecting calendar pictures and proofing words for a press release, with ease.

## Can Jost Capito, McLaren's new CEO, use his rallying savvy to put McLaren back on pole position?

**WORDS** DAVID EVANS

**PORTRAIT** STEVEN TEE/LAT

### CV Jost Capito

**Born** 29 September 1958, Neunkirchen, Germany

**2016** Appointed CEO of McLaren Racing in January, taking up the role at Monza in September

**2012-2016** Becomes director of motorsport at Volkswagen

**2009-2012** Switches to Ford Motor Company, with responsibility for global motorsports strategy

**2001-2007** Moves to Ford Europe as director of special vehicle engineering, ending up as director of performance vehicle line

**1996-2001** Joins Sauber F1 as part of Sauber Petronas Engineering, then becomes team COO

**1989-1996** Head of motorsport organisation at Porsche

**1985** Wins truck category in Paris-Dakar Rally

**1984-1989** Powertrain development engineer at BMW

**1984** Graduates from Munich Technical University with a Masters degree in mechanical engineering

From the outside, Capito's task at Volkswagen wasn't overly onerous. With an F1-spec budget, he bought the best of everything to dominate world rallying. Under his guidance, the German team has won both drivers' and manufacturers' titles for the past three years. In 2014 and '15, they won 12 out of 13 rallies. Ogier has already retained his drivers' crown; the Polo R WRC will do likewise in the makes' championship.

But the true test for Capito came last year. And it didn't come from within the service park. It came from Volkswagen's near-meltdown amid the exposure of a diesel-emissions scandal that rocked the motor industry. Overnight, the firm's WRC success became an apparent extravagance it could ill afford. Capito watched as board members who had supported and signed-off on his programme departed under dark clouds.

Jost cut the budget, rallied support from the new board and kept his team alive. It's that sort of commercial savvy allied to sporting pedigree that made him so attractive to McLaren.

"Ron Dennis told me he wanted somebody with experience of industrial companies who was also a racer," says Capito. "That's me. It's a difficult edge to walk on, but you need the balance between running the team, running the business and keeping the racing attitude."

Capito's clear about the process involved in his move from stage to circuit: the chase came from Woking. "Moving back to F1 wasn't something I was looking for," he explains. "And, to be honest, I would never have moved for just any job. Maybe Ferrari? Maybe not. Definitely McLaren."

Capito, you see, has an emotional investment in the team. "I was a fan of Bruce McLaren since I was six years old," he confesses. "I don't know why: maybe because he raced everything. He was a nice guy and he came from far away. Since then I have always been a McLaren fan."

Huge fan or not, Capito has arrived with his eyes open. And they've doubtless been opened even wider since he landed back in F1. Already, winning every other week with Volkswagen must seem a world away. "I hate not winning," he says,

"but I am realistic. I know there's not a switch for me to flick and then we start winning. We have to do the steps and go in the right direction and this brings its own motivation. I know this is a huge challenge, judged by the public every two weeks. It's the biggest challenge in global motorsport." 📌

ONE  
RACE  
AT A  
TIME

“ONE  
RACE  
AT A  
TIME”

Is the unthinkable about to happen? **Nico Rosberg** is within touching distance of the 2016 title and, if he wins it, he'll have beaten Lewis Hamilton *in identical machinery*. How has this come to pass? **Andrew Benson** analyses the potential for one of F1's greatest-ever upsets



PHOTO: STEVE ETHERINGTON/LAT



**Nico Rosberg has developed a mantra.** He is taking the season race-by-race, he says. This is how he has answered every single question about the championship since the second event of the season in Bahrain. There he won his second consecutive 2016 grand prix, in what would become a sequence of four straight victories.

He's been using his mantra as a pair of psychological blinkers to keep him focused on the matter at hand: deflecting the pressures that come with competing against a man like Lewis Hamilton. It has been adopted rigidly, even when the odd slight shift has exposed cracks that show its internal workings.

In Italy, for example, Rosberg admitted for the first time why he was sticking so rigidly to 'The Mantra'. It enabled him, he said, to stay focused on the matter at hand, rather than be distracted by fluctuations in form. He specifically mentioned that he'd gone from leading the championship by 43 points after winning the first four grands prix, to being 19 points behind after Hamilton's run of six wins in seven races, following their mutually eliminating first-lap crash in Spain. From Monaco, Hamilton went



**In Singapore, Hamilton might have been hampered by a hydraulic failure, but Rosberg put in the performance of his career with a dominant drive to victory**

on a roll that carried him through to Germany as F1's sole winner, with only Rosberg's victory in Baku (where Hamilton was notably off his A-game) breaking the sequence.

"If I think about 43 points going to 19 I would lose sleep over that," Rosberg said. "So I just don't think about it and enjoy winning the races."

There was another slight shift after his victory in Japan put him 33 points ahead. This time Rosberg admitted he was "well aware" of the gap, but added: "There is still a long way to go. And Lewis is still Lewis and he is always going to be tough to beat and he is going to give it everything so there's no point thinking about that because it is working quite well to stay in the moment."

It certainly is. Or at least it is on paper. Notwithstanding Hamilton's problems, Rosberg appears to have driven a better season – compared to Hamilton – than ever before.

**IN SINGAPORE, NICO WITHOUT DOUBT PRODUCED THE BEST SINGLE PERFORMANCE**

PHOTOS: STEVE ETHERINGTON/LAT; GLENN DUNBAR/LAT



## OF HIS ENTIRE CAREER, UTTERLY DOMINATING AN ADMITTEDLY OUT-OF-SORTS HAMILTON THROUGHOUT.

The bigger question is: has Rosberg's approach made a difference? Is he really driving better than ever before? Or is he simply benefiting from Hamilton's worse luck with reliability?

The two are not necessarily mutually exclusive, of course. But let's find out.

### RELIABILITY

The perception – particularly, but not exclusively, among Hamilton's fans – is that Rosberg is leading the championship this year only because of his team-mate's bad luck, especially with engine problems. Specifically, the identical MGU-H failures in qualifying in consecutive races in China and Russia, and the blow-up while leading in Malaysia.

The MGU-H failures created a compound problem for Hamilton. Firstly, they meant he

started last in Shanghai and tenth in Russia. In China he recovered to seventh after getting caught up innocently in the first-corner shunt; in Sochi he finished second. Those failures also meant he would have to start from the back at a specified race later in the year, as Mercedes brought in the extra engines he needed to complete the season. This happened in Belgium, where Hamilton recovered to third.

Rosberg, by contrast, has, at the time of writing, before the US GP, had only one points-costing technical problem: a gearbox glitch at Silverstone that ultimately led to his being demoted from second to third because Mercedes were deemed to have broken team radio rules in helping him get around it.

He was also handed a five-place grid penalty in Austria for a gearbox change, but a strong drive and the way strategy played out in his favour meant he recovered to lead going into the final lap before the collision with Hamilton that dropped him to fourth.

So what effect do these differing reliability stories have on the championship? Let's start with the most recent first.

### MALAYSIA: THE BIG END

Had Hamilton not suffered engine failure in Malaysia, he would have 25 points more and Rosberg three points fewer, which would have Nico leading post-Japan by five points rather than 33. That's a significant difference in itself.

Taking into account the other failures is more complex, because it is impossible to know where Hamilton might have finished had his weekend progressed without incident. But let's start with the scenario that least favours Hamilton – that Rosberg beat him in all the races in which he was affected by the engine problems.

In other words, he finished second rather than third in Spa, and second rather than seventh in China. And, if we're removing technical issues from influencing the championship, let's give Rosberg back his second place in Silverstone.

In that scenario, Hamilton would lead by seven points after Japan; he'd gain three in Spa, which would be cancelled out by Rosberg's extra three in Britain, but Hamilton then gains 12 for China. However, that's the situation that most favours Rosberg. The odds of their three seasons together are that Hamilton would have won at →



# ONE

least one of China, Russia and Belgium. In which case, he would have led by 21 points after Japan (reversing a one-two finish between two drivers is a swing of 14 points). Had Hamilton won both, it would be 35 points; all three and it's 49.

So we can safely say, based on the law of averages, that Hamilton would be leading after Japan, had the technical issues between the two Mercedes drivers been equal; the only question is by how much – either seven, 21, 35 or 49 points.

## PERFORMANCE

On paper, this is Rosberg's best season so far against Hamilton. After Japan, he had nine wins to Hamilton's six, while in 2015 and 2014 it was 10-6 and 11-5 in Hamilton's favour. But statistics can be misleading. Of those nine wins, only five were achieved when both started together on the front row and finished – Australia, Bahrain, Italy, Singapore and Japan. That's 55.6 per cent of Rosberg's wins occurring in genuine competition. Three of those five (60 per cent) were due to bad starts for Hamilton. His other wins came when Hamilton was taken out of the equation.

By contrast, Hamilton has beaten Rosberg six times on the same basis, in Monaco, Canada, Austria, Silverstone, Hungary and Germany. That's 100 per cent of Hamilton's wins occurring in genuine competition. Only two of those six (33 per cent) were down to bad starts for Rosberg.

It is a driver's job to get his car off the line, but starts also influence the championship. Hamilton had six bad starts that affected results (Australia, Bahrain, Canada, Monza and Japan); Rosberg three (Austria, Hungary, Germany). In each case, one (Canada for Hamilton; Austria for Rosberg) did not negatively affect either driver's race.

Then there's qualifying. Hamilton and Rosberg set eight poles each this year. In 2015 it was 11-7 to Hamilton and in 2014 11-7 to Rosberg, although the latter was more like eight-seven if you disregard Germany and Hungary, where Hamilton had technical failures, and Monaco, where Rosberg had his 'off' at Mirabeau.

The key measurement of pace is the average qualifying gap between the two. If you take the sessions where both can be compared, Hamilton has been faster in all three seasons, and his advantage has grown with time. In 2014, Hamilton's gap was 0.086 seconds; in 2015, 0.14s; and in 2016, 0.162s\*

**TAKE OUT ALL FACTORS THE DRIVERS CANNOT INFLUENCE AND HAMILTON HAS OUTRACED AND OUTQUALIFIED ROSBERG IN 2016, JUST AS HE DID IN 2014 AND 2015.**

\* UP TO THE JAPANESE GRAND PRIX



Rosberg has racked up nine wins (up to the Japanese GP) during 2016. Left to right from top: Australia, Bahrain, China, Russia, Baku, Belgium, Italy, Singapore and Japan

PHOTOS: STEVEN TEE/LAT; SAM BLOXHAM/LAT; STEVE ETHERINGTON/LAT

## LIES, DAMNED LIES AND STATISTICS

But statistics are not everything. Rosberg is driving better this year – and Hamilton occasionally less well – in some crucial ways.

Let's look at Hamilton first. Yes, he has had the worse reliability. But as of the summer break, he recovered with that brilliant run of six wins in seven races, which turned a 43-point deficit into a 19-point lead. Yet, at the time of writing, he had not won again, and had lost ground at least partly due to his own inconsistency.

He recovered brilliantly in Spa from the back of the grid to third, only to fluff his start in

**Hamilton retired from the Malaysia Grand Prix with an engine failure caused by a faulty bearing**



Monza after taking a dominant pole and hand Rosberg another win. He drove comparatively poorly in Singapore, would have won in Malaysia had it not been for an engine failure, and then messed up his start again in Japan.

## THE KEY QUESTION FOR HAMILTON THIS YEAR, BEYOND WHY HE HAS MESSED UP TWICE AS MANY STARTS AS HIS TEAM-MATE, IS: WHAT ON EARTH HAPPENED IN BAKU AND SINGAPORE?

In Azerbaijan Hamilton impressed throughout practice. He had a second's advantage over Rosberg in the first sector alone, but overdrove in qualifying and crashed in Q3. From P10, he was always going to struggle, and duly finished P5.

In Singapore, he had a very disjointed weekend, and not only because of the hydraulic failure that lost him half of P2. The problem was that he hardly completed any laps, constantly locking up in big braking zones.

Hamilton gains much lap-time advantage in such areas, referring to himself as "the last of the late brakings". And his *modus operandi* is to seek the maximum limit in these areas, to the extent that he often backs out of a lap that looks otherwise fine if he does not feel he got what he wanted from a particular braking zone. →

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# ATA TIME

Rosberg failed to maximise on Hamilton's early exit in Malaysia, making contact with Räikkönen, receiving a ten-second penalty, and ultimately finishing third

The problem in Singapore was that he took this too far, and hardly completed any laps at all before qualifying. And Marina Bay is not a place where a driver can go into qualifying and expect to perform if he has not built up a proper picture of the limit over the course of the weekend.

For Hamilton, it seems this was influenced by an unusual sense of distractedness throughout. One source close to him said: "He just didn't turn up in any mood to work." Meanwhile, insiders say Rosberg is genuinely different. For a start, he has driven more cleanly on track, especially when he has had places to recover. Mercedes executive director (technical) Paddy Lowe says:

**"FOR ME, THE STEP HE HAS MADE THIS YEAR IS THAT HE HAS IMPROVED HIS RACECRAFT CONSIDERABLY. HE'S PROVING MUCH BETTER IN FIGHTING FOR THE POSITIONS"**

"He's come across a few points along the way, with a few incidents that didn't quite come off as he wanted, but that's where he's made a step."

The difference is that Rosberg is no longer driving conservatively, as if he is going for a championship, but rather as if he is attempting to maximise a given weekend. *The mantra has become a guide for his on-track actions.*

Mercedes insiders add that Rosberg is also working better behind the scenes. He is well known for his technical approach to racing, but in the past this has sometimes been a weakness rather than a strength. He would dig down into too much detail and get lost, missing the bigger picture. And as the engineering team is a finite resource, that would affect his weekend.

A driver's job is to focus on the big picture, on the things that make a difference to being faster. This is what people say is so impressive about working with Fernando Alonso, and Rosberg has learned that lesson this year. It seems the mantra is being put into practice here, too.

**Guided by his 'one race at a time' mantra, Rosberg won the 2016 season-opening Australian GP**



In fact, Rosberg has applied this Buddhist-like 'focus on the now' across the board: in his focus on his private family life with his wife and young daughter away from the track and in his refusal to get dragged into controversial subjects of debate in news conferences.

**THERE HAS BEEN AN IRON CONCENTRATION ONLY ON WHAT MATTERS.**

This focus has emerged organically, rather than through some grand plan, says a source close to Rosberg, and is perhaps attributable to a sense of control and 'innerness' that reflects his origins as the son of a Finnish father and a German mother.

Rosberg is the introvert to Hamilton's extrovert. Hamilton is emotional; Rosberg less obviously so. This also carries over into their on-track characters, where Hamilton is intuitive and extemporaneous; Rosberg more deliberate and controlled.

But while this year Hamilton has swung from one extreme to the next, Rosberg has found a middle way that has brought his strengths to the fore, while minimising his weaknesses.

Hamilton is still the faster, and you can't deny that he has been desperately unlucky this season. But you can only control what you can control, and that 'one race at a time' philosophy may yet take Nico Rosberg, in 21 steps, all the way to the world championship. 🏆

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# BIG BANG THE £ THEORY



In terms of pounds spent or bang-for-buck, no F1 team achieves more with less than **Force India**. And this is how they do it...

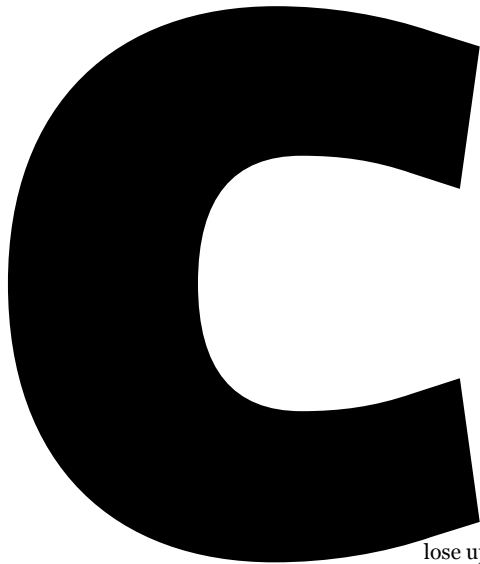
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**PHOTOS**

STEVEN TEE/LAT





lose up, placed under the spotlight, the VJM08 is a sleek, refined machine, with its unique slotted nose and tight rear packaging. It's quick, too. This year, Force India are vying with Williams to have the fourth-fastest car in F1. *Fourth*. That's an impressive vault up the grid from the team's humble beginning. In 2008, their first year under the ownership of Indian tycoon Vijay Mallya, Force India languished at the bottom of the constructors' championship, points-free.

Over the following eight seasons, they've risen to snap at the heels of F1's biggest teams. So how have they made such progress on a budget little more than a third of that of the big three ahead of them – Mercedes, Red Bull and Ferrari?

The secret is that only a third of the VJM08 is made in the tiny Dadford Road factory. Everything else – windtunnel research, the drivetrain, electronics, monocoque, engine cover,

“There were some very good people here who had been part of the team from the Jordan days,” says Fernley, “but we had to make some decisions to progress, and that was a pivotal moment for the start of our first five-year plan. We felt it would be helpful to align ourselves with a championship-winning team, so we closed the gearbox department at our factory. That was quite an outrageous decision from a staffing point of view, and a lot of people were uncomfortable with it. But Vijay and I tried to explain the rationale behind it: Is a McLaren gearbox technically better than a Force India gearbox? Yes. Is a McLaren gearbox more reliable than a Force India gearbox? Yes. Will the deal we put together be more cost-effective? Again, the answer is yes. So which bit of this decision have we got wrong?”

That alliance with McLaren led on to a switch to Mercedes as an engine and drivetrain supplier,

the results the next morning. But the number of times the link broke, the server stopped overnight or we had to wait two days for the results. There were so many inefficiencies that eventually I said: ‘Stop. We need our own CFD computer, let's spend the bit of money we do have on that.’ Instantly, we saw improvement.”

Szafnauer hired Andrew Green as the team's new technical director. Green had worked in the money-no-object environments of both BAR and Red Bull, but leaned on his early experiences at Jordan in the early 1990s to transform a staff of 385, operating on a budget of £90million (compare that with Mercedes' 815 employees/£250million budget), into F1's most successful team relative to spend (see panel on page 76).

“On my first week here, I looked at the total annual budget for the team and thought: ‘Is this just my R&D budget, or is this really the *whole* budget?’ When I realised it was the latter, it was

“I LOOKED AT THE TOTAL ANNUAL BUDGET FOR THE TEAM AND THOUGHT: ‘IS THIS JUST MY R&D BUDGET, OR IS THIS REALLY THE *WHOLE* BUDGET?’” ANDREW GREEN

sidepods, floor and hydraulics – is outsourced. It makes the team the most cost-effective operation in F1. But reaching this peak of efficiency is the fulfilment of a project many years in the making.

When Eddie Jordan left F1 at the end of 2004, his team passed into the hands of Alex Shnaider, under the Midland moniker, before being sold on to Michiel Mol (cue a ‘Spyker’ rebrand) and then to Vijay Mallya in 2007. The self-styled ‘king of good times’ christened the team Force India, and he retains a 42.5 per cent ownership stake equal to that of Sahara's Subrata Roy. The Dutch Mol family still retain a 15 per cent share.

Mallya appointed his long-time ally Bob Fernley to look after day-to-day operations, and Bob continues today as deputy team principal. It's to Fernley's office we retreat from the humid Sepang paddock, to discuss the team's beginnings.

a partnership that would yield advantages when the hybrid engine formula began in 2014. The link-up also included the use of McLaren's simulator and brought greater CFD know-how.

The union was never intended to last. Fernley likened the relationship to ‘learning to ride a bicycle’, and the stabilisers were cast aside in 2009, when former Honda man Otmar Szafnauer took over as chief operating officer when Simon Roberts returned to McLaren. Now freewheeling, Force India have started to make small investments in critical areas to commence the next stage of their development.

Szafnauer takes up the story: “We were in the early days of CFD when I arrived, and we used Tata's supercomputer in India for our experiments. We'd set up programmes, send them to India overnight, and the aim was to get

a shock. But you focus on the bare essentials and build it up from there,” says Green.

He cites a formula adhered to by Force India that's known as ‘the 80/20 rule’, whereby 80 per cent of gain is achieved for 20 per cent of cost.

“We don't spend money on aspects of the car that we believe will give only marginal gains. We know that we can spend half a million pounds on a new suspension system that might yield 0.1s or we could spend the same amount on aerodynamics that could yield a whole second.”

He admits maintaining that balance can be “very frustrating” for the 150 Force India engineers who are “champing at the bit to get on and design stuff and make the car go faster.”

“I have to rein them in,” he adds, “and say, ‘We can't look at that area, it's just not efficient, you've got to look somewhere else.’ That's →

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what we do on a daily basis. Everyone has bought into that mentality and everyone understands: if we overspend, that's it, we're finished.

"At Red Bull, if you had an idea, you designed it, made it and tested it," he recalls, "and if it didn't work, you threw it away. You'd try everything and pick the bits that worked. I'd love to do that, but we don't have the money. So we pick our shots wisely and make sure that every one of them hits the right target."

One of the first goals was investment into CFD; another was to create a tyre research department when the transition was made from Bridgestone to Pirelli in 2011. That's been instrumental in Sergio Pérez achieving four podiums over the past three years, using smart strategy and in-race tyre preservation.

More recently the decision was made to rent windtunnel time in Toyota's state-of-the-art 60 per cent scale facility in Germany, rather than upgrade Jordan's old 50 per cent scale tunnel in Brackley. It was more cost-effective to outsource and the high-fidelity results of the Toyota tunnel have resulted in a greater correlation between CFD experiments and on-track performance.

As the FIA sporting regulations are limiting windtunnel usage, teams are discovering that by

egos, no politics. We focus on getting the most out of people. The environment we have, the atmosphere in the factory, the structure of the meetings. You can't hide behind anyone, you have to make decisions."

As a result, good people get headhunted and some are tempted by the big-spending teams just down the road. Force India, though, have a strategy to fend off would-be poachers. "We try to make this a good place to work," says Green, "where we respect that people have a life outside F1. We don't crack whips; we try to keep people motivated. We have clever people who at any point can say, 'I've had enough, I'm going to Red Bull' and they'd be snapped up in an instant. But they don't, because they're enjoying working here and they know if they go to a bigger team, they become a smaller cog and play a smaller part."

"We can challenge our staff with new projects. When I came up through the ranks at Jordan, I used to look at everything. I'd be designing pedals one day, suspension the next, then a gearbox, so I was lucky to get a view of the whole car. Big teams section staff into very small areas of the car. So one guy can spend a year drawing brake ducts or axles. We encourage people to move, to refresh them and make it exciting."

best team to join eighth-placed Renault. Unless Force India can conjure a design 'magic bullet', they're unlikely to be fighting at the sharp end of the grid in the next few years, which is a shame for a team whose current position has been achieved on merit rather than reservoirs of cash.

"What hurts us is the long lead times, because when we produce a new car for 2017, our limited production capacity means we're constantly having to send our things to get made," says Green. "But releasing parts early means they're not as developed. So the teams who can reduce their lead times will produce more parts and get more updates on track. That will hurt us, particularly in the first part of next year."

"The development rate will be so strong that big teams will bring big updates to almost every race. We can't compete with that and when our updates come they will be more significant, but in between times we'll fall behind."

So P4 and 'best of the rest' may be a high-water mark for Force India, unless there's a change in revenue distribution. Force India can compete on a level playing field only if the bigger teams are restricted in spending. It isn't sustainable, argues Fernley, for Force India to increase spending to manufacturer-team levels.

"WE FOCUS ON GETTING THE MOST OUT OF PEOPLE. THE ENVIRONMENT WE HAVE... YOU CAN'T HIDE BEHIND ANYONE, YOU HAVE TO MAKE DECISIONS" TOM McCULLOUGH

running their own tunnels they are increasingly spending more time improving their efficiency. It's another example of Force India's cost-effective way of operating, as their windtunnel time can focus purely on performance.

The same principle applies to the VJM08. There is a small machining and composites department at Silverstone where the team make their own front and rear wings, steering wheels and suspension. Much of the rest of the car is made by local specialist suppliers. The floor, sidepods and engine cover are outsourced. The hydraulics are from Mercedes, as are the power unit, drivetrain and gearbox. The wiring loom is bought in, too. But over the next three to five years the team will bring more in-house and increase their self-sufficiency.

More machines and larger autoclaves need more space, and any upgrade at Dadford Road HQ will have a detrimental effect on the process of car building. Even so, the team's monocoque will be built in-house for the first time in 2017.

With a clearly defined operating structure, Force India are a lean, efficient organisation untroubled by layers of management. But with responsibility comes accountability.

"Our structure does help," says chief race engineer Tom McCullough. "There are no

With motivated workers, efficient decision-making and cost-effective spending, you can see how Force India have been able to claw their way from tenth in the constructors' table to fifth last year. That ascent brings benefits: not only can they have a say in the direction of the sport, thanks to a seat on the Strategy Group, but they benefit from a bigger share of the F1's prize pot.

Force India operate on £90million, with roughly £50million coming from TV money. The remaining £30m comes from sponsors, some of whom, for example Telmex, are linked to drivers. The remaining £10m comes from shareholders. So if you can run a team on £90million, where does the extra £140million spent by the likes of Mercedes, Red Bull and Ferrari go?

The answer is, it's all focused on research and development. And that's how much it takes to find an extra second – or sometimes less – on track. It's also why F1's top teams will have much more of an advantage over Force India next year, when a wholesale change of the technical regulations is brought in. With bigger cars, more aero and wider tyres it will be much harder for the smaller teams to devote time and resource to creating a car that can compete with F1's big guns. That explains Nico Hülkenberg's seemingly nonsensical decision to leave F1's current fourth-

"The £250million a year budget is not a business model; it's typical of a manufacturing company who will spend whatever they can to win. Force India has to be attractive to another investor at some point," says Fernley. "Vijay is an incredible supporter of F1 but at some point he will want to sell. How would you sell Mercedes or Red Bull? Who can afford it other than a major car manufacturer? They are not sustainable."

"But does that mean we will not be able to move up to third or higher? Unless there is some sort of financial control, it is never going to happen. Even with a cost cap of £150million a year, that's £1million a week spent on development. How much more do you need? For me, Formula 1 should be an intellectual exercise. It's not about how much you can spend."

In the longer term, cost controls might appear, but, for now, this little team can be proud of what they've achieved with such limited resource. Force India race crew may walk the pitlane peering enviously at the kit afforded by richer neighbours, but they might be surprised at how many in F1 are looking enviously at them.

Many rival operations could learn a thing or two from the Force India way of racing: lean, mean and, right now, pound-for-pound the best value team in Formula 1. →

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## How Force India are the most cost-effective team in F1

Position*	Team	Budget	Headcount	Cost per position
4th	Force India	£90m	385	£12.9m
5th	Williams	£110m	525	£18.3m
7th	Toro Rosso	£90m	330	£22.5m
1st	Mercedes	£230m	815	£23m
2nd	Red Bull	£230m	725	£25.5m
3rd	Ferrari	£260m	950	£32.5m
8th	Haas	£100m	250	£33.3m
6th	McLaren	£180m	660	£36m
10th	Manor	£60m	160	£60m
9th	Renault	£150m	520	£75m
11th	Sauber	£90m	330	£90m

\*Championship positions as of the 2016 US GP

**BIG  
BANG  
THEORY**

The order of the table above is calculated by dividing the budget of each team by the number of places they have advanced in the constructors' championship this season (assuming that every team started in 11th prior to the season-opening Australian GP). So Force India's £90m is divided by the seven places gained (as they are currently fourth in the world championship). It's fairer than simply dividing their budget by points because the points system is weighted in favour of podium positions, and it's also more accurate than simply dividing budget by headcount, which would flatter Manor, who predominantly outsource, and would unfairly penalise Williams, with their large factory. 📍

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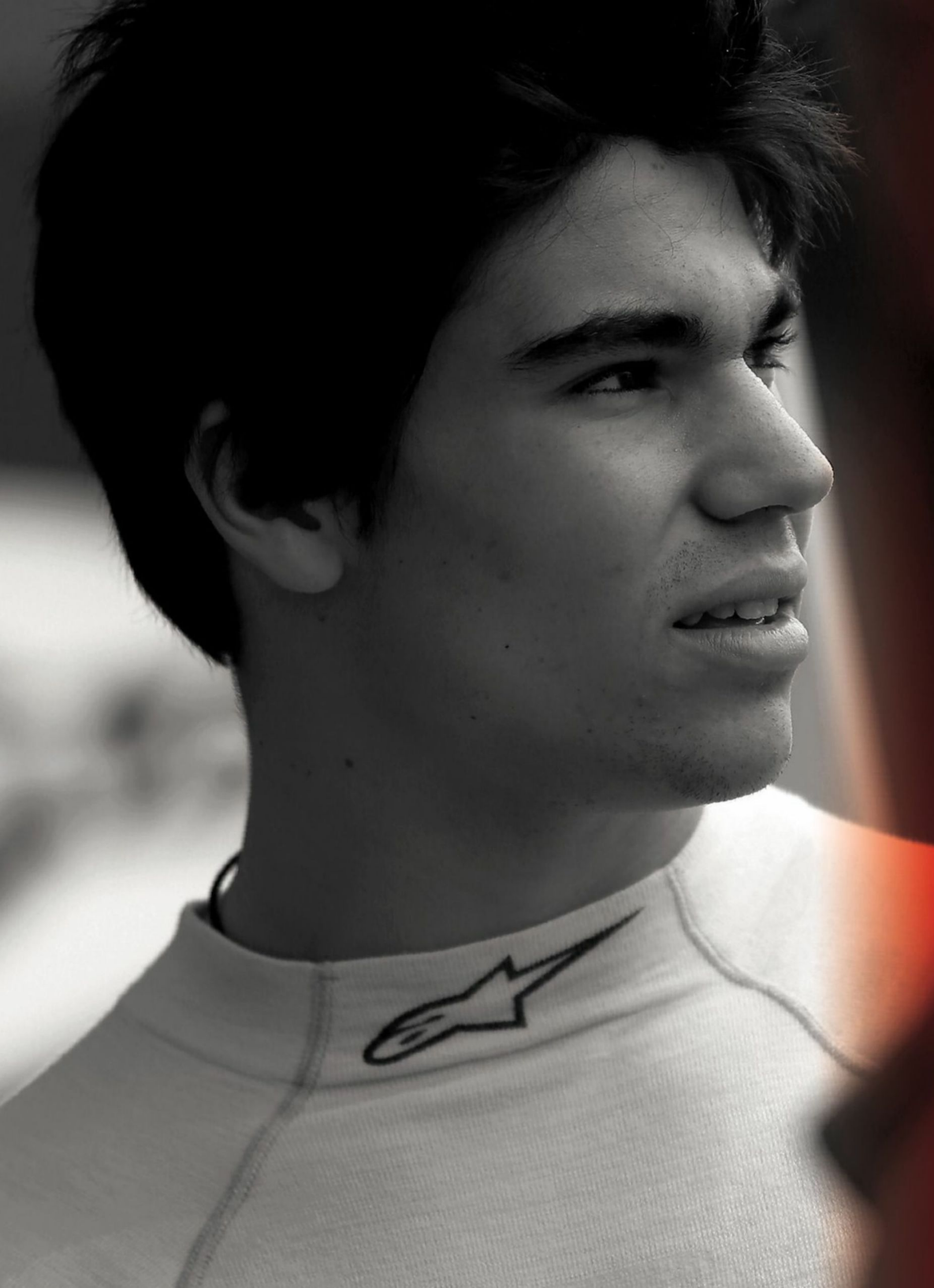
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# A QUICK STROLL

**Sebring, Florida, USA;** 26 January 2014. The echoes of Bruce McLaren and his Cooper-Climax taking victory at the circuit's only running of the United States Grand Prix, way back in 1959, have long faded. Instead, at a track best-known for the Sebring 12 Hours sportscar classic, the focus is not on Formula 1 past; it's on Formula 1 future.

The Italian Prema Powerteam squad have brought 12 Formula Abarth single-seaters over for the first stop in a four-event Florida Winter Series. Lining up on the grid for their debut car race are 16-year-old Max Verstappen, and a 15-year-old from Québec called Lance Stroll.

Like Verstappen, Stroll has been taking his fledgling car-testing steps in a Formula Renault 2.0. Like Verstappen, his rise through the ranks will create controversy in no small part due to his youth. So how appropriate that their first car race should come at the venue where Bruce McLaren, set a long-standing record as the youngest-ever grand prix winner, all those years ago.

Prema driver coach Nuno Pinto is on hand to guide all the youngsters, and will remain there through every step of Stroll's career, via winning the 2014 Italian Formula 4 Championship, claiming the 2015 Toyota Racing Series in New Zealand, his two seasons in the FIA Formula 3 European Championship culminating in the 2016 title, and even his baby steps in a two-year-old Williams Formula 1 car as he prepares for his rookie season at the sport's pinnacle in 2017.

"It's three years since the plan started," says Pinto. "I started working with Lance in October 2013, and the goal was that in the championships he enters, he should fight for the win. Of course we never thought he should win in F3 as a rookie [he was fifth in 2015], but up to now he won F4, then the TRS, then second rookie in F3, and now he is F3 champion..."

Ah yes, 'the plan'. Stroll's father, Tommy Hilfiger tycoon Lawrence Stroll, is famously – and fabulously – wealthy. His boy was placed with the Ferrari Driver Academy until late 2015, when he jumped ship to Williams, taking former FDA boss, and ex-Ferrari F1 sporting

Profiles of new Williams signing **Lance Stroll** unfailingly mention his father's great wealth, but there's so much more to this Canadian newcomer...

**WORDS** MARCUS SIMMONS

director, Luca Baldisserrri with him. Everything has been laid on a plate with the highest-quality metaphorical cutlery you can imagine.

That came in the form of Prema. Stroll Sr invested heavily in the team, who brought in Felix Rosenqvist to guide Lance through his first F3 season in 2015, and ditto Nick Cassidy in 2016. Apparent team orders prompted zero resistance from Prema team-mates Cassidy and Maxi Günther when Stroll passed them for three of his wins, but 11 further victories he earned himself. You don't do that without ability.

## LANCE STROLL CV

<b>Born</b>	29 October 1998, Montréal, Canada
<b>2016</b>	Comfortably wins European F3 Championship, still with Prema, taking 13 wins and 12 poles. Announced as Williams driver for 2017 F1 season
<b>2015</b>	Wins Toyota Racing Series in New Zealand and finishes fifth in European F3 Championship with Prema. Leaves Ferrari Driver Academy and joins Williams as a development driver
<b>2014</b>	Wins Italian Formula 4 Championship with Prema Powerteam, taking seven wins and five poles.
<b>2014</b>	Two podiums in Florida Winter Series
<b>2010</b>	Becomes part of the Ferrari Driver Academy
<b>2008-2013</b>	Karting

He also has great passion for his sport. Prema insiders allude to Stroll being the most disappointed of anyone that he couldn't return to the end-of-season Macau F3 Grand Prix for a crack at winning it (he was eighth on his first visit in 2015) due to his F1 testing. Such passion was key to his controversial rookie shunts in F3 at Monza and Spa, which ignited controversy; he wanted to prove he was just as good as anyone else. And such passion prompts him to slap the table to emphasise a point, as he talks articulately and intelligently about his sport.

Ask him about his first serious test in the 2014 Williams at the Hungaroring, which must have been relentless on such a track, and he enthuses: "F3's really physical, more than people think. It's rough in the F1 car, so your neck's all over the place – it needs to be really strong to survive a lap, especially in Hungary if you're doing long runs and stuff; it really gets to you. But in F1 there's power steering so it's actually quite easy to turn the wheel; F3 can get really heavy."

Pinto attests to that passion: "Drivers have different personalities and they all work in different ways, but Lance... When he could have taken vacations he would be in the simulator, looking at onboards, asking us what he needed to improve, and he does this week in, week out."

Stroll has now improved to the point where he will certainly not be out of place on the Formula 1 grid, as indeed no Euro F3 champion would be, but he knows he has much to absorb: "In F1 there's much more going on – you know, the strategy and tyre awareness that we don't have in F3, which is just kind of flat-out. But that's just going to be part of the learning process. In F1 today there's a lot of artificial overtaking, you know? So DRS is a big thing and there's a lot to learn from it."

Stroll *will* learn though, because he really wants this. That day at Sebring in January 2014, Verstappen finished fourth, Stroll seventh. Don't bet against the same in F1 round one 2017, and the echoes of the critics fading just as Bruce McLaren's engine note did. 📍

# Romain Grosjean

He's an old hand at answering your questions, but you had more matters for Romain to settle – from his move to Haas to his future plans

WORDS STUART CODLING PORTRAITS ANDY HONE/LAT

A cool waft of air greets *F1 Racing* as the doors of the Haas motorhome part, offering sanctuary from the oppressive heat without. Like everything about the Haas F1 team, this space is slick, clean and impressive without being superfluously flash; it has much in common with the thoroughly Zen Honda unit that's often its near neighbour in the F1 paddock.

Esteban Gutiérrez, about to undergo a grilling of his own from a group of attendant Spanish-speaking journalists, smiles and nods from a nearby table. But where is Romain? No need to fret: here he comes, steered by team media man Stuart Morrison. RoGro bids us a chirpy hello and deposits himself in the chair opposite, stretching out as he regards the pile of question cards on the table.

It's at this point that drivers will, on occasion, exclaim "How many?" as they perform a swift mental audit of the interview's potential duration. But not Romain: he's been a *You Ask The Questions* subject twice before and has thoroughly enjoyed it each time.

With an impish grin he picks up the first card, flips it over, scrutinises it, and then holds forth...

**What teething troubles have you had with your new team so far this year?**

*Mark Peace, UK*

We've had a few front-wing failures, but the biggest challenge in F1, for everyone, is to get the tyres to work – it's even more complicated than it was in the past. That is our number one priority. The rest has been pretty straightforward.

**Which team-mate have you enjoyed working with the most?**

*Agne Lazauskaite, UK*

Definitely Fernando [Alonso, they were Renault team-mates in 2009]. He was a friend before I joined Renault. We had a good relationship and it was interesting for me to learn from him. We did only seven races together, but the little I saw was enough to show how good he was.

**F1 Racing:** I take it he didn't exactly coach you, but did he give you any advice?

**RG:** No, you don't do that, but everything was open in the team so I could see all his data. It's very difficult for one team-mate to help the other one. He is always your competitor, so you always want to beat him.

**Tell us a funny Fernando Alonso story from when you were team-mates...**

*Andrew Allen, USA*

Oh yes. I used to drive on ice a lot, and I took him to Geneva in an old car with spiked tyres. I drove first to show Fernando how to do it and then put him in the driver's seat. So he did the first lap and I said: "Turn the steering wheel, turn the steering wheel!" and he couldn't – he was trying to do it too late. I took the steering wheel for him, showing him that you need to turn 300m before the corner to make it. Then, when he got it, he was perfect – but it was funny that I had to pull the steering wheel for him.

**F1R:** Was that in Chamonix?

**RG:** It was quite near Chamonix, and then we had a nice Raclette [a local dish of melted cheese, with pickles, potatoes and dried meats]. Not very good for the diet, but a very good evening.

**Did you have funny moments when Kimi Räikkönen was your Lotus team-mate?**

*Oz Tuzcu, USA*

[Long pause]. Mmmmm, Kimi. Good question. [Another long pause]. Nothing really! →



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Romain  
Grosjean

Haas  
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Romain  
Grosjean

**What's your opinion of your new team-mate, Esteban Gutiérrez?**

*Akram Castillo Cardenas, Mexico*

He's a great guy, he's doing his best after a year out – he's bounced back. He's been doing well in qualifying; he just needs to score points now. It's been quite interesting for me to look at his data.

**FIR:** Do you find you always learn something new from every team-mate?

**RG:** You do. Every team-mate is different, every one has strengths and weaknesses. You learn different things from different people and the more that happens, the better you are.

**Your country gave us the wonderful Statue of Liberty. In return, how about a long overdue race win for a Frenchman in an American team?**

*Scott Walschlager, USA*

Yeah, sounds good. Where do we sign?

**Why should the fastest driver start first?**

*Jonathan Kibble, UK*

That's the essence of qualifying and I don't think it should change. Qualifying is a great challenge, and you need to put three really good laps together, Q1, Q2, Q3, and especially in Q3 going for pole. I think you should get points for pole.

**FIR:** Qualifying is one of your strengths...

**RG:** Yeah, not this year but in previous years.

I'm a bit better in the race this year than I've been in qualifying. I still haven't got 100 per cent out of the tyres, but when I do it should be fine.

**Do you miss Pastor Maldonado?**

*Sorin Botoaca, Canada*

He was a great guy. We had fun together at Lotus, but I wouldn't say I was his best friend.

**Was your decision to move to Haas F1 related to a possible future with Ferrari, due to the connection between the two?**

*Craig Christensen, USA*

No. People made that connection, but coming to new team, being an experienced driver, being able to score the first points for a new American team, plus having the US support, was a good opportunity and that is why I moved to Haas.

**Do you like the idea of there being a 'driver of the day' this season?**

*Alan Barnes, Australia*

It's a good idea. I haven't agreed on all of them, but it's a great way to engage the fans and get their opinions. The GPDA has made a survey, trying to get the fans' opinions about what we can do better to make the sport more popular, and having the fans engaged is a great thing.

**Which do you prefer: French cuisine or American fast food?**

*Karel Belohuby, Czech Republic*

French cuisine. There are some good American ingredients and some good recipes like ribs and so on. But the fast food... no, not for me.

**FIR:** You do a lot of cooking, don't you? Is there any American dish that you like?

**RG:** A burger. I buy as much American meat as I can; I love it. But it's such a big country, I don't know enough yet. I want to try proper big ribs.

**Other than Austin, what tracks or circuits would you like to drive on in America?**

*Ed Dominguez, USA*

Lots... Sonoma, Watkins Glen, Laguna Seca, Road Atlanta, Indianapolis – both the oval and the road course.

**FIR:** Indy was a brilliant venue and an amazing place for F1 to go, but the track was...

**RG:** Yeah, the inside was not good. I think the banking must be quite fun.

**FIR:** I was going to say the other way round!

**Would you ever switch to IndyCar or NASCAR, maybe with Haas, in the future?**

*Adam Pender, UK*

NASCAR, for sure!

**FIR:** The full thing?



**When you were choosing Haas this year, did you think you'd taken a big risk in your career?**

*George Oancea, Romania*

My life is a risk. Twenty-one weekends a year I take a risk and they can be heavy. We know Formula 1 can be dangerous. Changing team is a risk, just as changing job in normal life. It was calculated. I knew what I was leaving and I knew, more or less, what I was leaving for, and I'm just very happy to be here.

**FIR:** Did the situation at Lotus make it easier for you to move?

**RG:** It was just knowing, thinking about what Renault or Lotus or whatever would be like in 2016, and what it would be like being in a new team. And I think I am in a better position now than I would have been in a yellow car.

**RG:** Either Sonoma or Watkins Glen. Not an oval, but I'd want to go testing and from the testing I'd want to see how I could be in the race.

**FIR:** Have you had any conversations about it?

**RG:** Yeah, a little. I sat in a car with Kurt Busch and I think it would be a great thing. I went to a race this year before the US GP and maybe I'll go to the final, but definitely I want to compete.

**FIR:** Do you follow NASCAR?

**RG:** I do a little. Just the last laps. Not the whole thing, it's just a bit too long.

### Which do you prefer: American football or European football?

*Mark Taylor, Canada*

Hmmm... [Long pause] I'm more familiar with European football.

**FIR:** Do you play football?

**RG:** You know the saying 'to have two left feet'? That was said for me. I play with my son, who is three years old, and I'm a disaster.

### If you could change anything in current Formula 1 cars, what would it be?

*Winston Smith, USA*

I wish sometimes we were closer so we could race more all together and have great fights.

**FIR:** Is it still very difficult to follow a car?

**RG:** Yeah, as soon as you follow a car you lose a bit of downforce. Then you slide on the tyres and they overheat and then you are off. Having more diffuser effect and having tyres that allow more sliding without overheating would help a lot.

### The GPDA met with Pirelli this year to discuss improving tyre performance. Is that something you agree with?

*Angus Nicholls, UK*

Yeah, I don't think the tyres are the best we could have. But Pirelli don't have any test days, so how can you make a better tyre if you can't test it? It's tricky. Pirelli have got a lot of testing for next year's tyres and hopefully they can improve, because we know it's not the best we could have.

### Are you in favour of points for qualifying and reverse grids for the top ten in a race?

*David Russell, Ireland*

Reverse grid: no. I experienced it in GP2 and Formula 3 and it's tricky. Points for quali: yes.

### What are your thoughts on halos?

*John Zeiner, USA*

I don't like it. I understand the safety grounds, and I made an interview where I said I didn't like it, and people went straight into me and said: 'You don't remember Jules Bianchi!' and so on. It wouldn't have changed anything in Jules' case. It goes against the DNA of F1 for me. If I



"Being an experienced driver, being able to score the first points for a new American team, plus having the US support... that is why I moved to Haas"

had to vote I'd say no, but if it's coming on safety grounds I'm happy. In some cases it wouldn't change anything and may create other problems. If we implement it, we need to make sure that it's thought through, and that's what the FIA will do.

### When you joined F1 you had a reputation for crashing, but now you are highly regarded. What caused the turnaround for you and when did it happen?

*Richard Vaughan, UK*

Nothing changed dramatically. I took the wrong decisions at the wrong times and got a lot of shit for it. But when you are driving at 190mph into Turn 1 it's a matter of 0.1-0.2s. I had the wrong objective. I wanted to win from Turn 1. Probably I got success too early in the second part of my career [when he returned to F1 in 2012 after seven races for Renault in 2009]. In the fourth race [Bahrain] I got a podium, in Spain I was fourth, in Canada I was second and I should have won the European GP. All I wanted was to win a race and that was the wrong approach.

### Has the extra choice of tyre compound affected your strategy for a weekend?

*Lee Bishop, UK*

It's pretty cool. It's one of the best of the recent changes. With an extra compound you can

develop the strategy, even though everyone is going for the same choice. If at a race weekend your car is better on one tyre than another, you can go for it, especially on tracks like Bahrain where you can overtake easily – you can play with the strategy. It's a great choice.

### If you had to listen to one song on repeat for an entire race, what would it be?

*Harry Roberts, UK*

That's a good question. What do I like at the moment? [Long pause]. I would probably choose a David Guetta song.

**FIR:** Any particular one?

**RG:** I quite like the one he did for the Euros, 'This One's For You' [the official Euro 2016 song] and the one he did with Sia – 'Bang My Head'.

### Was there a defining moment as a child that made you want to be a racing driver?

*Liina Kalm, Estonia*

Dijon-Prenois... I went there to see a race, a Swiss championship race, and there was a BMW M1, the white one with the blue and red stripe. I just fell in love with that car and racing that day.

**FIR:** How old were you?

**RG:** I was seven, maybe. I went with my dad.

### With autonomous vehicles on the horizon, where do you see the sport in ten to 15 years, when computers can drive an F1 car around the track faster than a human?

*Mark Cipolloni, USA*

I hope it doesn't happen – it's not good for my wages! Would you like to see the Tour de France with automatic bikes going up the hill? No. We want to see humans, we want to see effort, we want to see gladiators, superheroes, racing and giving the best, be it tennis, cycling or racing. So no, I hope not because I love racing and I want to be racing for quite a bit. And then I hope young drivers get the chance to race as well. 🍕

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# 48 HOURS IN TOKYO

Right after he scored his first world championship point, we hung out with Renault's **Jolyon Palmer** in Tokyo to chew over the ups and downs of his first season in Formula 1

**WORDS** JAMES ROBERTS  
**PICTURES** STEVEN TEE/LAT

As **Jolyon Palmer** swept across the finish line at the Malaysian Grand Prix, he did so with his arm stretched out towards his pitwall, soaking up the praise from his Renault mechanics. By finishing in tenth, he'd scored his first Formula 1 point – and his best result of the year so far. But that aside, there wasn't time to celebrate. Time, for a racing driver, is always in short supply.

That much is clear when we bump into Palmer early the following morning, getting ready to board a plane to his next destination. Along with his friend and trainer, ex-Formula 2 racer Jack Clarke, Palmer is waiting at the gate – not quite on pole in the queue – for flight MH70 to depart Kuala Lumpur and travel the 3,338 miles to Tokyo's Narita airport. As we chat about the previous day's result, a few passengers begin to recognise JP, fumble for their camera phones, and pluck up the courage to ask the genial British racer for a posed photo. →

Out and about on the streets and subways of Tokyo, Palmer is recognised by fans wherever he goes and happily stops to pose for photos and sign autographs



“Yeah, it’s never nice to be pointless,” he jokes, reflecting on a situation that yesterday’s result has swept aside. “When I crossed the line to finally get that point I was really delighted, and it’s a bit of a weight off my shoulders as well. I’d accepted I probably wouldn’t score a point this year, so to finally get one was great.”

Palmer continues to consider this over the next seven hours of the Malaysian Airlines flight, 30,000ft up in the air, crossing the South China Sea and heading east towards Japan. After touchdown it’s a trip on the Narita Express (which is ‘Express’ only in the sense of not having many stops – Narita is nearly 40 miles away from the enormous metropolis of Tokyo), and then a short taxi ride to the plush Okura Hotel situated in the fashionable Roppongi Hills.

As the sun rises high over the Tokyo skyline on Tuesday morning, Palmer sits in the lobby of the Okura, now rested after an impromptu night

out with a number of fellow F1 drivers who had gathered to celebrate Max Verstappen’s 19th birthday. He’s keen to get out on foot and explore the city on his first visit here.

Standing on the platform at Kamiyacho station, waiting for the next train on the Hibiya subway line, he tries to sum up his rookie year so far. “It’s been very up and down because the main thing that has been tough has been dealing with the car,” he says. “All year, getting out of Q1 has been difficult and we always knew that we’d be on the back foot this year.”

Since the team ran critically short of money in their final months before the takeover by Renault late in 2015, new-car development barely progressed. So the RS16 is, in effect, last year’s chassis, with even a few bits from the 2014 machine carried over. Since a new set of regulations is coming for 2017, Renault have treated the RS16 as a stop-gap machine.

“It was great when Renault took over, but we all knew that it would be super tough,” Palmer expands. “We’ve had some developments through the year: a big engine upgrade around Canada and a smaller one in Singapore, but everything has been geared towards next season. The car is a 2015 Lotus and no matter how much money you throw at it, it’s still a 2015 Lotus. So it’s been frustrating from that point of view.”

We board the subway train – it’s past rush hour, so the carriages aren’t so packed that the white-gloved platform attendants need to step in to push incoming passengers aboard – and head underground across the city to Harajuku. This is the fashion and culture district of Tokyo and Palmer is relaxed and chatty as we walk along Takeshita Street, peering into the neon-lit shops that line each side of the pedestrianised road.

At one point he’s stopped by a local fan who recognises him, but doesn’t speak a word of



**“It’s never nice to be pointless. When I crossed the line [in Malaysia] to finally get that point I was really delighted, and it’s a bit of a weight off my shoulders as well”**

English. He’s carrying a plastic bag and out of it pulls an A4 sheet of plain white cardboard and a satisfyingly thick black marker pen. Jolyon chuckles at the serendipity of carrying such items; you never know when you might meet someone famous. He duly signs the card and poses for the obligatory photo.

Shortly afterwards, we cram into a lift and head to the fifth floor of a tower block for a traditional Japanese lunch of tempura, sashimi and a bowl of white fluffy rice – all washed down with a cup of miso soup.

Over the course of lunch we talk about the highs and lows of his first season in Formula 1. The strong debut in Melbourne, followed by the disaster in China. The new floor that was fitted to the car in Sochi, and the last-lap collision with his team-mate Kevin Magnussen in Spain.

“It was for 12th place and I think it was one for the egos. He came roaring up behind me on fresh

softs and launched a move from so far back – it was the right-hander before the last chicane, I’ve never seen anyone try a move there before. I cut the corner to avoid hitting him and stayed ahead. To be fair to Kev, he put his hand up straight away in the debrief afterwards.”

The battle with Magnussen has been close all season. In Austria, the gap between them in qualifying was just 0.024s over the nine corners, and over the longer lap in Baku, Palmer was just 0.1s off. “Kev and I have been pretty evenly matched and he compared favourably against Jenson Button during his year at McLaren, so I’ve been happy with my speed this year.”

But there have been the shunts, too, which have been partly down to the non-linear response of the RS16. It hasn’t been an easy car to handle. Magnussen suffered a huge crash at Spa, which brought out the red flags, while Palmer’s biggest hit was at Monaco.

“I’d always done well in Monaco in GP2 [he won there in 2012 and 2014], so I was trying to make up something extra since I was still using the old engine that was costing me a couple of tenths to Kev. I put it in the wall in FP1, so I was on the back foot and pushing even harder.

“Then in the race I ran over the painted wet zebra crossing on the start/finish straight – and there was nothing I could do. I was in sixth gear and went straight into the wall. It was a hefty hit. I kept going and couldn’t brake and then I could feel the air rushing through my feet and I thought then this could be a really horrible one. The first impact doesn’t look that big on TV because it was a glancing blow, but it was in sixth and a real whack. →



**“The car is bad on compliance... Between Kev and I we’ve made what looked like some silly mistakes this year, but it’s because the car is so unpredictable over kerbs and bumps”**

“If we get the car in the right window then it’s okay, but if it’s outside that then suddenly it’s very snappy. The car is bad on compliance over bumps and kerbs and that makes it very difficult to drive. Between Kev and I we’ve made what looked like some silly mistakes this year, but it’s because the car is so unpredictable over kerbs and bumps. For Kev in FP3 in Canada, he hit a bump at the wrong angle and was in the wall. He did something similar over the kerbs at the top of Eau Rouge at Spa – and that was the same for me in Monaco.”

Before his points in Sepang, Palmer’s best chance had been in Hungary where he was running in tenth place with 23 laps to go, until he made a mistake and spun at Turn 5.

“I was so in my comfort zone and then in the blink of an eye it was all undone and I was distraught. When the car’s not working you attack a corner as you normally would and suddenly the rear of the car steps out of line. That forces you to lift off and as you make an oversteer correction, that damages the tyres.

“Then it’s a snowball effect. You suffer not only from the aero not working, but as soon as you put too much heat into the tyres they don’t work, and then it’s a disaster. Then you lose confidence because the car isn’t where you want it to be.”

Once everyone has finished grappling with their chopsticks, we descend from the restaurant back onto the bustling streets of Shibuya and head for the subway once more. Jolyon is planning his train journey to Suzuka. His first stop tomorrow is Tokyo station, where he’ll pick up the Shinkansen bullet train to Nagoya and then a Kintetsu line train to Suzuka. There are

still five races to go this season and when we chat about next year, he says he’s in the dark about the team’s plans. Only after our return to Europe will it be revealed that Nico Hülkenberg has been signed to race for Renault from 2017 onwards.

“I’ve learned so much this year, that if Malaysia had been earlier in the season I wouldn’t have got that result,” says Palmer. I’ve learned so much about tyre management, strategy, losing as little time as possible with blue flags and knowing where to pick my battles. And that’s what I’ll continue to do. Keep my head down and concentrate on doing a good job.”

We make our separate ways across the Tokyo subway system, but not before he’s recognised again and stops to pose for one more photo. Whatever happens in Palmer’s future he can be proud of the hard work he’s put into his first year in F1 and enjoy the fame it’s brought him. His debut season certainly hasn’t been pointless. 📷



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Ferrari  
F12tdf



Shelby  
Cobra



Renault  
Talisman



Volkswagen  
Golf GTi



WHO

Mercedes  
280SL



Audi  
RS6



Renault  
Twizy



Ferrari  
458



Mercedes  
C63 AMG



Volkswagen  
Golf TDi



BMW  
M1



Nothing



McLaren  
P1



Aston  
Martin  
Vantage



Ferrari  
F40



Porsche  
Panamera



# DRIVES WHAT?

What cars do the current stars of Formula 1 run as their daily drives? Who has the tastiest? And who doesn't own a car at all?

INTERVIEWS CHRIS MEDLAND

## WHO DRIVES WHAT?



Lewis Hamilton  
**Shelby Cobra**



"My favourite car is my Shelby Cobra. It's such a unique-looking car. It's got a beautiful wooden steering wheel, a nice V8 block and great power. It's also a soft top and I keep it in the States, so it's great for driving around California."



Nico Rosberg  
**Mercedes 280SL**



"I love the look and feel of this car, and sitting high up with my wife – we can't take Alaïa because the baby seat doesn't fit in there! It's not a car I'd always wanted, but DC lent me his for my wedding. I drove it and it was just unbelievable."



Sebastian Vettel  
**Ferrari F40**



"I love the design of the F40. It's got great shapes and it's a real icon. It was the last turbo Ferrari produced until the California T in 2014. I like the form of the older supercars. Plus it was the last car to be made while Enzo Ferrari was still alive."



Kimi Räikkönen  
**Ferrari F12tdf**



"My favourite is my Ferrari F12tdf, a V12 GT car. I like the handling and engine noise. It has all the road-car comforts, yet the engineers have done such a great job that you feel like you're in a racing car even though the engine is in the front."



Felipe Massa  
**Ferrari F40**



"I have a La Ferrari and an F40, but I'd pick the F40 because I remember when I was a kid the F40 was always the dream. I keep them both in Monaco. I'll go for a coffee in them, just driving slow, enjoying them and not even pushing."



Valtteri Bottas  
**Mercedes C63**



"When I was 17 or 18 I dreamed about the C63 and it was the first car I bought. I like the engine, the sound and the feeling, and you can use it every day. It has plenty of space for luggage and four seats. It's a sports car, but you can still use it."



Daniel Ricciardo  
**Aston Martin Vantage**



"I've got the V12 S. I haven't had it long. The noise is great – that's definitely the coolest thing about it. But it looks good as well, which is important. For me, the newer Astons are a bit more aggressive-looking; a bit younger in a way."



Max Verstappen  
**Aston Martin Vantage**



"I'm mainly driving the Aston Vantage, so I'm happy. It's a cool car and it looks very aggressive. You have to be very careful though, you don't want to crash it – it's pretty expensive! I don't drive it that much. I've only done 500km in it so far."



Nico Hülkenberg  
**Volkswagen Golf TDi**



"My Golf TDi is fine. It's convenient, it doesn't drink too much, and it's comfortable. It's not really quick, but it doesn't matter – my job is quick. You can't drive those fancy cars on a day-to-day basis. But I'd love a Porsche 918 Spyder."



Sergio Pérez  
**Ferrari 458**



"The Ferrari 458 is my only car. It's so fun to drive – it feels like a kart! It's really pointy and there's a lot of grip. I've had it for two years, I think, and it has always been a car I wanted. There's just something special about having a Ferrari."



Daniil Kvyat  
**Nothing**



"I don't have a car. Maybe soon I'll get one. Last year I had an Infiniti Q50 for the whole year, and it was nice to drive. We'll see what the next one will be – at the moment I'm walking or getting taxis. I'd love to have a Ferrari... maybe the 488."



Kevin Magnussen  
**Renault Talisman**



"I don't own a car, but I use a Renault Talisman and it's great. It's big – I don't know how much it does to the gallon, but it's a lot. It can go once around the earth on a tank of fuel! It's not meant to be a race car, it's meant to be a comfortable car."



Carlos Sainz  
**Volkswagen Golf GTI**



"In my family we've always had Volkswagens. My dad had a Porsche. He never used it because he didn't want to go to Madrid in it because it would seem like showing off. The Golf still has power, but nobody notices me – and it's easy to park."



Jolyon Palmer  
**Renault Twizy**



"This is the most fun car I've had. I live in London, so I'm pretty limited on speed anyway, but it's a silent assassin. You cruise round, no windows, everyone's saying things. It's distinctive, tough to avoid, but you're at one with the city."



Marcus Ericsson  
**Porsche Panamera**



"I really like Porsches, I think they make good cars. I had a 911 Carrera 4S for a month this summer as well, which was pretty nice. It's the quality of the drive which is the main thing for me. This Porsche Panamera is just for driving at home."



Felipe Nasr  
**Audi RS6**



"This is a spectacular car. I mean, the look isn't very racy, but when you drive it you say: 'Woah!' How much this car can do is incredible: it has nearly 600bhp, yet it's a car I can drive to all the European races. It's nice not to have to take a plane."



Fernando Alonso  
**Honda Accord**



"I have a Honda Accord that I keep at home in Dubai. It's spacious and comfortable and I use it every day. I can leave it for days, or even weeks, in the airport parking. It's powerful, but fuel in the Emirates doesn't cost too much, does it?"



Jenson Button  
**McLaren P1**



"I own plenty of great cars – some modern classics, some vintage American muscle. The best is the McLaren P1. It's just unbelievable: fast but welcoming. It's the kind of car you see and think, 'I wish I had one of those...' Then I smile and realise I do."



Esteban Ocon  
**Mercedes C63 AMG**



"Mercedes gave me the C63 for the year, and I've got a Renault Clio RS Trophy. My favourite is the one that has more horsepower, of course, but when I want to go shopping or something the Clio is quicker in slow corners. I enjoy driving both."



Pascal Wehrlein  
**Mercedes GLE Coupé**



"The GLE Coupé is nice, but it's not my dream car. My favourite is an SLS. I want to try to get hold of one of those. I like the style and, for me, it's the best car; I really like it. I don't have one at the moment – I need to score a few more points for that."



Romain Grosjean  
**Jaguar F-Type SVR**



"The F-Type is cool – it's four-wheel drive and also rear-wheel drive, so you can really play with it on the circuit. It's a great car and I love the sound of the engine. It's a V8, 5-litre, it's a big fucker! I've got two Jaguars; the other is an F-Pace."



Esteban Gutiérrez  
**BMW M1**



"I bought the M1 five years ago, and there weren't many in this version that were released. All the time I get offers from people to buy it for a lot more than I paid for it, but I keep saying it's not for sale – it has no price."

PHOTOS: GLENN DUNBAR/LAT; STEVEN TEE/LAT; ANDY HONE/LAT; SAM BLOXHAM/LAT; CHARLES COATES/LAT; STEVE ETHERINGTON/LAT; JUSTIN LEIGHTON/DENIS MEUNIER; FERRARI/REX FEATURES; AUDI/AG; AMERICAN HONDA MOTOR CO

# GO FIGURE

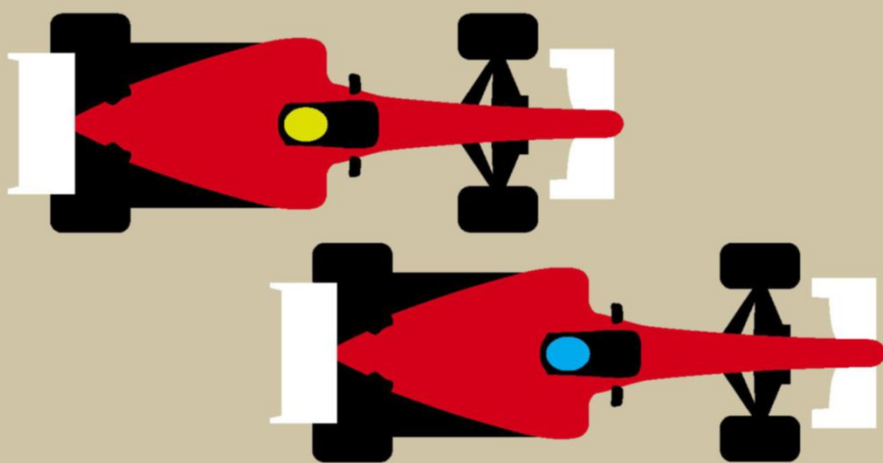
As he counts down his final few GPs, we look back over Felipe Massa's 14 years in F1

# 6 WINS

Scored in 2008, his most successful F1 season

# EIGHT SEASONS AT *FERRARI*

Only Michael Schumacher has had a longer-lasting career with the Scuderia



# 77

races entered alongside Fernando Alonso at Ferrari

# 13 YEARS

since a Brazilian (Ayrton Senna) triumphed in their home race – until Massa won it in 2006

# 3000

The last title won by Massa was the 2001 F3000 Euro Championship

# TWENTY-FOUR

His record of consecutive classified finishes, from Malaysia 2012 to Spain 2013

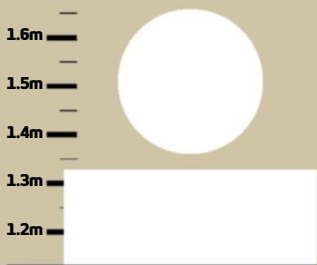


# 42.86%

His victory strike rate at the Turkish GP (he won three out of seven races)

# 19

Massa's F1 race number, which he chose because he'd used it in karting



# 1.66m

His height – making him the shortest driver on the grid



# 6,585 miles

The distance between the two football teams Massa supports: São Paulo FC and Fenerbahçe SK in Turkey

# 37

test days for Ferrari in 2003, the year he was out of a race seat after his 2002 debut at Sauber

# TWENTY-SIX

The number of times Massa has qualified fourth – more than in any other position



extra Prancing Horses adorned his 2011 Brazilian GP helmet

# 2

The number of times Felipe has been disqualified – in Canada 2007, and Brazil 2015



THE HISTORY OF F1 PART 12

# THE QUIET REVOLUTION

The concluding chapter of our Formula 1 history series brings us right up to date, as the fall of Max Mosley ushers in a less authoritarian regime at the FIA, paving the way for the end of Formula 1's screaming-engine era

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PETRONAS

The date was 30 March 2008, and the day began like any other Sunday. The Formula 1 season was but two races old, and with a week to go before the Bahrain Grand Prix many people attached to the F1 scene were attending to mundane weekend tasks in the spring sunshine. But not for long. F1's ecosystem was about to turn upside down.

As detailed last month, the idea of a breakaway F1-type series had been mooted by an alliance of the road-car manufacturers involved in the sport, but FIA president Max Mosley and F1 ringmaster Bernie Ecclestone had, between them, shut that down. Dissatisfaction remained, though, not only over the distribution of money within F1, but also about what was perceived as the increasingly patrician and dictatorial behaviour of Mosley.

The *News of the World's* shrieking headline that day – 'F1 BOSS HAS SICK NAZI ORGY WITH 5 HOOKERS' – gave a cue for the knives to come out, even though many of the story's details (chiefly the allegation that Mosley's S&M encounter included Nazi-themed roleplay) were subsequently shot down in the High Court when Mosley pursued News Group Newspapers for breaching his privacy. On 24 July 2008, Mr Justice Eady found in Mosley's favour and awarded £60,000 – damages three times higher than in any previous privacy case.

That was not the end of the matter. Mosley would continue to champion the cause of privacy, and this case became part of the fabric of the Leveson Inquiry, which exposed and excoriated many of the more squalid practices of the tabloid press. But he would not survive as president of the FIA, though he has since claimed that he planned to step down in 2009 anyway.

This was one of many critical periods in the sport's history, in which it was gripped by fears over sustainability. Mosley had pushed through many cost-cutting proposals, but others – such as the idea of a budget cap, and a proposal for teams to be able to run 'customer cars' – stuck in the craw of many stakeholders. As a result, the Concorde Agreement, F1's great confidential

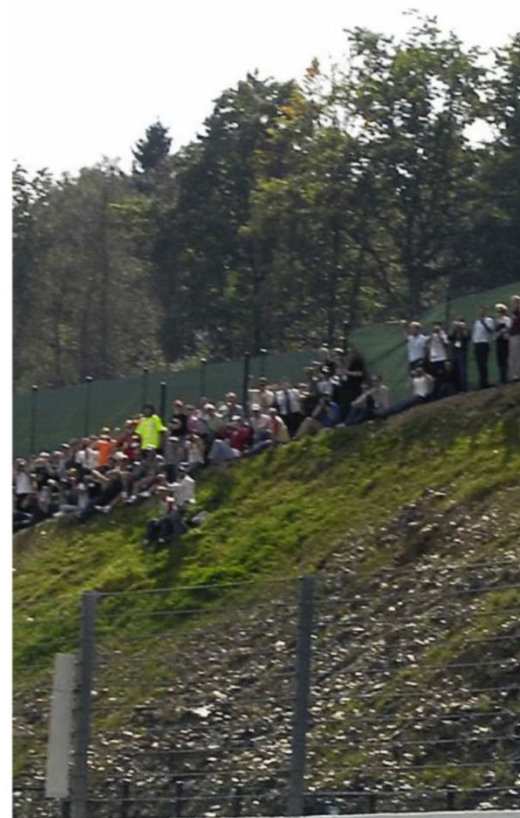
commercial contract, had expired at the end of 2007 and a new one had yet to be agreed. The sport existed in a kind of limbo. Perhaps this is why Ecclestone, a long-time ally and associate of Mosley, pointedly failed to stand by him at this time – a decision he would later come to regret.

Whether or not the *NotW* story was part of a concerted attempt to oust Mosley is hard to ascertain. Mosley had his suspicions that he was set up, and has said: "Eventually the truth will come out." Whatever that truth is, immediately after the *NotW* hit the news stands that March, Mosley's enemies began to move against him. There were calls from senior figures within the industry for him to resign, and he was publicly un-invited from attending the 2008 Bahrain GP.

Over the coming months, Mosley would adopt a more conciliatory stance, inviting teams to submit their own cost-cutting proposals, and stating in a letter that: "The major manufacturers are currently employing up to 1,000 people to put two cars on the grid. This is clearly unacceptable at a time when all these companies are facing difficult market conditions." But the rancour within F1, both on and off the track, had reached an intensity that was difficult to defuse.

The 2008 Formula 1 season had begun with a resumption of hostilities between McLaren and Ferrari. Competitively, 2007 had gone down to the wire, with three drivers – Kimi Räikkönen (the eventual champion, by a single point), defending champ Fernando Alonso and sensational new talent Lewis Hamilton – in contention for the title at the final round. Yet the thrilling on-track action had been overwhelmed by politics: Hamilton's raw speed upset and destabilised his McLaren team-mate Alonso, and paranoia over favouritism built to a crescendo at the Hungarian GP, where each attempted to sabotage the other's qualifying session.

Separately, but not without intriguing questions over who knew what and when, from mid-season on there came a daily drip of revelations about Ferrari intellectual property falling into the hands of McLaren engineers.





The mutual dislike between Max Mosley (far left) and Ron Dennis (left) was widely believed to spill over into the FIA's treatment of McLaren, as evinced by the \$100m 'Spygate' fine and the harsh 25-second penalty handed to Lewis Hamilton following his battle with Ferrari's Kimi Räikkönen at the 2008 Belgian GP (below)



What eventually became known as 'Spygate' left McLaren badly wounded. They were faced with a \$100million fine and the deletion of their constructors' points, which meant further ongoing humiliation as they were consigned to the far end of the paddock and pitlane. The scale of the fine shocked and alarmed even McLaren's rivals, and the general feeling in the F1 paddock was that the FIA's pursuit of the case was vindictive, bordering on personal. It was known that Mosley detested McLaren boss Ron Dennis and that the feeling was mutual. McLaren remained under scrutiny, and the design of their 2008 car was forensically examined by FIA experts for any trace of Ferrari IP.

On track, the action was clean, close and exciting, thanks in part to the maturity of the technical regulations and recently added details such as a freeze on engine development and the banning of traction control, actioned through the introduction of a common Engine Control Unit. The balance between Ferrari and McLaren was nicely poised: immediately before the *NotW* story broke, Hamilton won from pole in Australia and then the newly crowned Räikkönen won for Ferrari in Malaysia. On-track incidents between the two teams – such as Hamilton driving into the back of Räikkönen in the pitlane in Canada, paving the way for Robert Kubica to claim a first victory for BMW – continued, even as off-track relations eased. At the start of July, McLaren announced they had made a “concluding payment” to settle Ferrari's legal costs; in this respect, at least, they had laid down their arms.

On 29 July, five days after Mr Justice Eady had swept aside the *NotW*'s feeble 'public interest' defence and left the door ajar for Mosley to sue for defamation, the teams met in Maranello, to discuss their response to the FIA's cost-cutting challenge. Ecclestone and CVC Capital Partners' Donald Mackenzie were also present. Afterwards the teams announced that they had formed a new body, the Formula One Teams' Association (FOTA), led by Ferrari chairman Luca di Montezemolo. FOTA's public mandate was →





Hamilton wins the 2008 Chinese GP, the penultimate race of the year, taking the title battle with Ferrari's Felipe Massa right down to the wire

In the wake of the financial crisis, Honda (right) withdrew from F1. Ross Brawn (centre) took over the team, and Jenson Button's subsequent title victory (far right) in the BGP 001 was one of the feel-good stories of the year



to act as a united front in the ongoing Concorde Agreement negotiations, and they also pledged to promote a more fan-friendly attitude among the teams; behind closed doors, one of the main items on their agenda was the removal of Mosley as soon as humanly possible.

Events at the Belgian Grand Prix served only to bolster the perception that the governing body was meddling heavy-handedly in sporting matters. Late on, in the wet, Hamilton tried to pass Räikkönen for the lead at the chicane, but cut the corner and emerged ahead. He let the Ferrari reclaim the lead, but then immediately passed Räikkönen again at the La Source hairpin. Shortly afterwards, Räikkönen spun off and Hamilton won the race, but the stewards handed Lewis a 25-second penalty that demoted him to third and passed the victory to Felipe Massa. The result left Räikkönen well adrift in fourth place in the championship, but elevated Massa to within two points of Hamilton's lead.

Niki Lauda described the stewards' decision as "the worst judgement in the history of F1", but the result stood and a subsequent appeal by McLaren was thrown out as inadmissible.

The title battle between Massa and Hamilton went down to the wire, and at a dramatic Brazilian GP, Massa won from pole, only to miss out by a single point as Hamilton scrambled through a late-race deluge to gain a crucial position, fifth, at the penultimate corner on the last lap. The outcome might have been different for Massa had his pitcrew not blundered at the Singapore GP, which he'd led from pole before Renault's Nelson Piquet crashed – deliberately, as it turned out – forcing a Safety Car deployment and Massa's fateful pitstop.

Events on-track were about to take a back seat again, though, as the global economy went into meltdown. "Because of the nature of sponsorship contracts," Dennis had told reporters at the Chinese Grand Prix, "F1 is usually late into a recession and late to come out of it." The cheap credit mechanisms that had been artificially inflating economies all over the world had begun

"Having given up on the lame-duck 2008 Honda machine early, Brawn arrived with the most developed car on the grid, and – thanks to FOTA co-operation – the team had the benchmark Mercedes engine"

to malfunction in 2006, with the abrupt bursting of the housing-market bubble in the US. Now what had been known as the 'credit crunch', as banks cut back on lending to one another and to consumers, became a full-on recession as the troubled investment bank Lehman Brothers went bust and the US government refused to bail it out. Panic spread. People stopped spending money they didn't have. In early December 2008, faced with stocks of unsold cars, Honda became the first manufacturer to pull out of F1. Toyota and BMW would soon follow.

Mosley and FOTA remained at loggerheads, generally communicating via letters copied to the media. That October they had cut a deal on cost savings for the seasons ahead, including an agreement in principle on the introduction of a standardised Kinetic Energy Recovery System (KERS), but the manufacturers had pushed back hard against a Mosley initiative to introduce a standardised engine and drivetrain. Naturally they feared the effect this would have on the technology messaging they wished to associate with their brands. Mosley had put the idea out to tender anyway, and now, post-Honda, he repackaged the idea as a life raft for the sport.

Just hours after the Honda announcement on 5 December, Mosley issued a fresh missive to the remaining teams – copied to the media, as ever – announcing that Cosworth and Xtrac had won the tender to supply complete powertrains from 2010 onwards. The teams could continue with their existing engine deals or take advantage of this new, more affordable option. Since the deal depended on at least four teams signing up, Mosley subsequently announced a tendering process for new teams to join F1. He also initiated plans to force through the budget cap.

Uncertainty ruled as F1 embarked upon a long-planned new technical regime involving KERS – an idea originally brought in to generate synergies with road car technology and keep the manufacturers interested – and revised front- and rear-wing geometries to improve overtaking. Neither worked especially well, particularly KERS, which did not produce enough useful power to compensate for its additional weight.

Still, 2009 was eventful on track even as controversies raged off it; in the heat of the 2008 championship run-in, McLaren and Ferrari had diverted resources from '09 development and now had to suck up the consequences. Against the odds, and with assistance from Ecclestone in seeing off sundry distressed-asset shysters, Honda team principal Ross Brawn secured a management buyout of his former team. Having given up on the lame-duck 2008 Honda machine early, Brawn arrived with the most developed car on the grid, and – thanks to FOTA co-operation – the team had the benchmark Mercedes engine.

Jenson Button won six of the first seven races for Brawn. As other teams caught up, though, so too did Brawn's tight finances, and while Rubens Barrichello added two more wins to the team's tally, the second half of 2009 was very different to the first. Fifth place in Brazil was just enough for Button to win the championship, leaving the organisers of the new final race of the season in Abu Dhabi nonplussed at their grand prix becoming something of a non-event.

Midway through that year, another public exchange of letters had signalled the final flurry of the war between FOTA and the FIA. The FOTA members had lodged only conditional entries to F1 for 2010 and beyond, and continued to refuse to submit to the idea of a budget cap, even →

## HISTORY TIMELINE

2008

Prodrive ditch plans to enter F1 with a McLaren chassis and Mercedes engine. Max Mosley wins a vote of confidence at an FIA meeting in June. Singapore hosts F1's first night race.

2009

Controversial 'double diffuser' design, used by Brawn, Toyota and Williams, permitted by FIA Court of Appeal. Slick tyres return. FOTA protest plans to award title to driver with the most wins.

2010

Red Bull's RB6 is a point of discussion as rivals debate its exhaust-blown diffuser and accuse the team of fitting flexible aerodynamic devices. McLaren introduce the drag-defeating 'F-duct'.

2011

Social unrest leads to the Bahrain Grand Prix being postponed and then cancelled. Pirelli become F1's sole tyre supplier. Drag reduction system (DRS) is introduced. KERS is made optional after not being used during 2010.

2012

Seven different drivers win the first seven races after exhaust-blown diffusers are banned, but Red Bull quickly adapt to the new regime, and Sebastian Vettel takes the drivers' title with four consecutive late-season wins.

2013

HRT fail to make the start of the season after being put up for sale. Plans to host a street race in New Jersey fall through. A new Concorde Agreement is signed in July. The F1 Strategy Group is created to formulate new rules.

2014

Bernie Ecclestone pays a £60million settlement in a German bribery case, and describes the state of Formula 1 as "not acceptable to the public" as the sport adapts to a new hybrid technical package.

2015

Honda re-enter F1 as engine supplier to McLaren. At the Abu Dhabi Grand Prix, Red Bull team principal Christian Horner claims that around half the teams on the grid are insolvent. Renault agree a buyout of the Lotus team.



F1's total domination by Red Bull and Sebastian Vettel (left) stretched from 2010 to 2013. But as the turbo hybrid era arrived, Mercedes (below), with their own, superior engine technology, came to the fore

though the FIA had raised the notional amount from \$30million a year to \$40million. Mosley set a deadline of Friday 18 June for them to remove the conditions they'd attached to their 2010 entries. On Thursday 17 June, after an eight-hour meeting at Renault, the FOTA members announced that they would form a breakaway championship. It was like 1981 all over again.

Less than a week later, and following further talks, Mosley announced he would not stand for re-election as FIA president that October. The budget cap was duly consigned to the scrapheap. With these concessions in the bag, FOTA stepped back, and its members agreed to sign a new Concorde Agreement to the end of 2012, while working towards further cost-cutting measures.

Those hoping this would be an end to F1's political woes would be disappointed. With the desired outcome of Mosley's departure achieved, FOTA's unity crumbled, and they became a busted flush, promises of a fan-focused future proving empty. The four new teams who lodged entries believing they would be competing under a budget-cap regime amounted to little; one did not even produce a completed car, another was barely ready for the first race of 2010, and only one now remains within the sport, as Manor.

Manufacturers continued to flee. BMW sold up and left in such a rush that they nearly offloaded their team to a shady investment vehicle led by a convicted fraudster, Russell King. Toyota left at the end of 2009. The revelation of the Singapore fix – 'Crashgate' – prompted a sponsor exodus at Renault, resulting in that team being put up for sale as well. FOTA's victory against Mosley looked veritably Pyrrhic. The only positive news seemed to be the sale of Brawn to Mercedes.

But Mercedes, who had invested on the promise that FOTA members would agree to a cost-cutting regime known as the Resource Restriction Agreement (RRA), were about to be dealt a lesson in F1 realpolitik. After an exciting 2010 in which four drivers arrived at the final round with a chance of the title, on-track competition stagnated between 2011 and 2013 as Red Bull outspent and outdeveloped their rivals. Post-Mosley, FOTA members could agree on little, and the RRA went up in smoke. Brawn had to go back to the Mercedes board seeking more money; his recruitment drive would ultimately yield results, but the board lost confidence and began to edge him out.

As Red Bull and Sebastian Vettel dominated, F1's stakeholders groped for quick fixes.



"The irony is that it is Mercedes, who bought a team on the basis that it would deliver maximum PR value for little investment, who have ended up having to spend more than originally envisaged, but are now in a position of utter dominance"

Innovations such as blown diffusers proved hard to regulate; whenever the FIA tried to close off one door of development, another opened, a case in point being the Coandă-effect exhausts that became *de rigueur* in 2012. When Pirelli were appointed as sole tyre supplier in 2011, replacing Bridgestone, they were directed to supply rubber that would degrade rapidly. The aim was to replicate the conditions that had made the topsy-turvy 2010 Canadian GP so thrilling, but the results did not satisfy everyone, and drivers have complained about the tyres ever since.

The political scene was also in deadlock. Ecclestone and Mosley might not always have been as cosy as they were portrayed, but more often than not Ecclestone could count on his old ally's support. Former Ferrari team principal Jean Todt was Mosley's chosen successor as FIA president, but he was his own man – and determined not to make the same mistakes. Under him, the governing body became less confrontational, less dictatorial and less fixated on media management. Teams were given a formal say in the shaping of regulations under a new governance structure. Again, the results have not been to everyone's satisfaction: F1 is

no longer beholden to the whims of one or two individuals, although there are those who declaim what they see as management by committee.

Car manufacturers now wield more power than ever in F1. It was their influence, and the diminished power of Ecclestone in the post-Mosley world, that led to one of the biggest changes in F1 history: the adoption of hybrid turbocharged powertrains from 2014. The philosophy was aimed at keeping F1 relevant in a changing world where access to fossil fuels is ever more costly. One unforeseen consequence was that the new, lower-revving engines would be quieter than their screaming predecessors, to the dislike of Ecclestone and others.

Another consequence was development expense in a cost-conscious era. The irony is that it is Mercedes, who bought a team on the basis that it would deliver maximum PR value for little investment, who have ended up having to spend more than originally envisaged, but they are also now in a position of utter dominance. Brawn's vision cost him his job, but has also bought three consecutive constructors' and drivers' titles.

In for a penny, you might say, in for several million pounds. It's always been the way in F1. 📌

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## Hamilton edges ever closer

Lewis followed his win in Austin with a decisive victory in Mexico City to close to within 19 points of team-mate Rosberg. Can he do it, or is it too little too late?

### DEBRIEF



#### 110 US GP

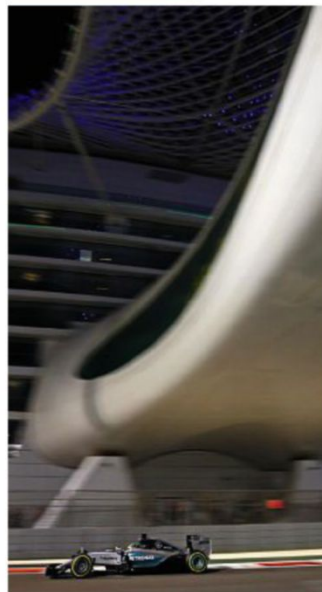
Lewis delights his fans and keeps his title dreams alive in Austin



#### 114 MEXICAN GP

Big smiles at Mercedes, but lower down the podium chaos reigns

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Formula 1 lights up the night skies as dusk descends in the desert

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Your views on why the penalty system is in need of a shake-up



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So many seem to crave it, but fame is a double-edged sword

# RACE DEBRIEF

by Anthony Rowlinson

## United States Grand Prix

23.10.2016 / Circuit of The Americas, Austin



# Austin maestros make merry

As Lewis Hamilton proved that he's the COTA master, Fernando Alonso put in a drive for the ages

**If you've ever** wondered why it is that Fernando Alonso remains the most highly rated driver in Formula 1, you had only to watch the closing laps of the 2016 US GP for an explanation. There he was, in full matador mode, raging against his machine in pursuit of fifth place, defying those ahead of him – Felipe Massa and Carlos Sainz – to keep him from what he considered his due.

With ten laps to go, Sainz was in possession of fifth place and closing on a result that would have been his best yet in Formula 1. Having starred in qualifying to crack into the top ten, his Toro Rosso team reckoned a two-stop strategy would be their best means of securing a strong points finish. And as the laps ticked down, their gamble of leaving Sainz to complete the last 26 laps on softs – five more than the recommended maximum – seemed to be paying off.

The trouble was, Massa was closing on Sainz while Alonso was closing on Massa. In a post-

Ferrari reprise of the infamous 2010 “Fernando is faster than you” team order that handed Alonso victory at the 2010 German Grand Prix at Massa’s expense, Fernando approached Felipe with irresistible intent. Spaniard caught Brazilian on lap 52 at Turn 15, and Alonso threw an uncompromising move up the inside of Massa’s Williams, thwacking his former team-mate aside like an irritating mosquito as he surged past.

The contact forced Massa to pit with a puncture and condemned him to seventh place, while Alonso surged on, in pursuit of his younger compatriot, berating Massa for the wheel-banging as he went: “You cannot close the door with half a car in front of you.”

Sainz had already radioed over to his team that “my tyres are finished”, and the inevitability of Alonso prevailing was akin to watching a great white shark hunt down and devour a fleeing seal. When Alonso is in this frame of mind, resistance is absolutely futile.

Into Turn 1 on the penultimate lap, Alonso, on mediums, was all over a gripless Sainz, and took a wide line in as Sainz went defensive. It was hopeless. At the end of the back straight he was ahead of the Toro Rosso, despite running wide, and screamed “Yee-ha!” to his crew at Turn 12.

Yee-ha indeed, for this was an epic drive from an epic driver and reconfirmed McLaren’s steady progress through the midfield, with Jenson Button finishing in ninth place to redeem his troubled qualifying a day earlier.

None of this, though, should detract from the achievement of Lewis Hamilton in taking his 50th Formula 1 victory. In doing so, he became only the third driver to reach that mark, along with Alain Prost (on 51) and Michael Schumacher (on 91). “I can’t believe there are three of us,” was his gracious acknowledgment, “but I hope better things are ahead.”

First on that list must be his unfinished business with the 2016 world championship

chase. Winning here (Lewis's fourth Circuit of The Americas victory in five starts) was the most he could do in terms of maximising his points gain relative to championship leader Nico Rosberg, although Rosberg's own solid P2 meant he dropped just seven points from his pre-race 33-point advantage to Hamilton. They now stand at 331 to 305 – a 26-point margin with three races to go. The gap means that even if Rosberg finishes in second place at each one of those three grands prix, he will take the championship, regardless of Hamilton's results.

For a while, though, in Austin, Daniel Ricciardo looked as if he might get in the way of Mercedes' otherwise unruffled progress to their fifth one-two of the season.

At the start, both Mercedes got away well, but Ricciardo's launch was better. This let him pull alongside Rosberg into T1 as they dragged up the hill. Rosberg had taken a wide line in, inexplicably following Hamilton through with seemingly little thought of defence. Ricciardo needed no second invitation; he nipped inside Rosberg and pinged off the apex like a rubber ball thanks to his soft Pirellis and the excellent traction of his RB12. He pushed Rosberg over the exit kerbs and was able to draw ahead as they carved through Turns 3 through to 6.

Ricciardo remained in contention for second place until the inadvertent intervention of his team-mate, Max Verstappen, on lap 28. Verstappen pulled out of the race with a gearbox failure that caused his rear wheels to seize when he parked his car. Its immobility necessitated the use of a crane to lift it from the track, triggering the Virtual Safety Car.

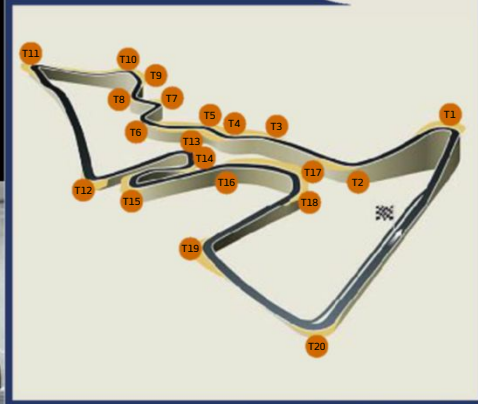
During three laps of slow motion, both Mercedes pitted for fresh mediums that had proved unexpectedly well suited to coolish track temperatures of 33°C. Ricciardo, though, stayed out, thereby granting Mercedes what was in effect a 'free' stop and dropping him into a lonely P3. Ricciardo reckoned he'd lost around ten seconds to Rosberg and was gutted, more than anything, to have been deprived of a late-race dust-up. "I was looking forward to the fight," he said, "even if Nico had a bit more pace than me."

Vettel dragged a downforce-light Ferrari home in fourth, although he'd been shaded for much of the weekend by Räikkönen, who'd outqualified Seb P5 to P6, and who had looked the more competitive during the race. Alas, a strong result was squandered by a pitbox fumble that sent him out on lap 38 with a non-secure right rear. Cue retirement and a classic moment of Kimi comedy as he rolled backwards down the hill, until being ordered to switch off and retire. His engineers were heard voicing concern over his actions. But this was Kimi. They could have left him alone. He knew what he was doing. 🚗

## The story of the race

Hamilton starts well and leads into Turn 1, but Ricciardo dives into second place ahead of Rosberg

## CIRCUIT OF THE AMERICAS



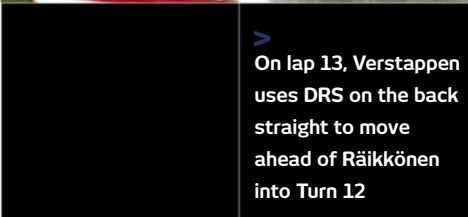
Pérez spins on contact with Kvyat at the first corner. Kvyat is later given a ten-second penalty



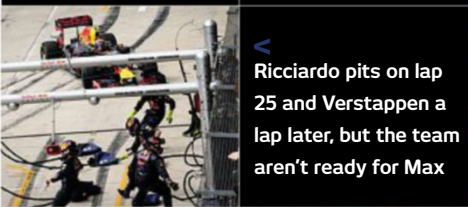
Hülkenberg and Bottas make contact and suffer punctures. Bottas rejoins but Hülkenberg retires



After the first stops, Hamilton leads from Ricciardo, Rosberg (now on mediums), and Räikkönen



On lap 13, Verstappen uses DRS on the back straight to move ahead of Räikkönen into Turn 12



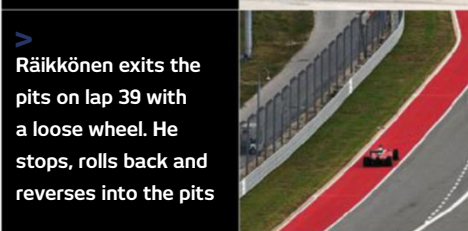
Ricciardo pits on lap 25 and Verstappen a lap later, but the team aren't ready for Max



Verstappen retires on lap 28 with gearbox problems and brings out the VSC

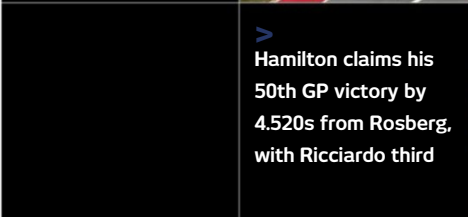


Hamilton and Rosberg pit under the VSC, which lets Rosberg jump into P2 ahead of Ricciardo



Räikkönen exits the pits on lap 39 with a loose wheel. He stops, rolls back and reverses into the pits

Alonso passes Massa for sixth on lap 51 and then Sainz for fifth into Turn 12 on the penultimate lap




Hamilton claims his 50th GP victory by 4.520s from Rosberg, with Ricciardo third



# US Grand Prix stats

The lowdown on everything you need to know from the weekend at the Circuit of The Americas...

## THE GRID

	<b>1. HAMILTON</b> MERCEDES 1min 34.999secs Q3
	<b>2. ROSBERG</b> MERCEDES 1min 35.215secs Q3
	<b>3. RICCIARDO</b> RED BULL 1min 35.509secs Q3
	<b>4. VERSTAPPEN</b> RED BULL 1min 35.747secs Q3
	<b>5. RÄIKKÖNEN</b> FERRARI 1min 36.131secs Q3
	<b>6. VETTEL</b> FERRARI 1min 36.358secs Q3
	<b>7. HÜLKENBERG</b> FORCE INDIA 1min 36.628secs Q3
	<b>8. BOTTAS</b> WILLIAMS 1min 37.116secs Q3
	<b>9. MASSA</b> WILLIAMS 1min 37.269secs Q3
	<b>10. SAINZ</b> TORO ROSSO 1min 37.326secs Q3
	<b>11. PÉREZ</b> FORCE INDIA 1min 37.353secs Q2
	<b>12. ALONSO</b> McLAREN 1min 37.417secs Q2
	<b>13. KVYAT</b> TORO ROSSO 1min 37.480secs Q2
	<b>14. GUTIÉRREZ</b> HAAS 1min 37.773secs Q2
	<b>15. PALMER</b> RENAULT 1min 37.935secs Q2
	<b>16. ERICSSON</b> SAUBER 1min 39.356secs Q2
	<b>17. GROSJEAN</b> HAAS 1min 38.308secs Q1
	<b>18. MAGNUSSEN</b> RENAULT 1min 38.317secs Q1
	<b>19. BUTTON</b> McLAREN 1min 38.327secs Q1
	<b>20. WEHRLEIN</b> MANOR 1min 38.548secs Q1
	<b>21. NASR</b> SAUBER 1min 38.583secs Q1
	<b>22. OCON</b> MANOR 1min 38.806secs Q1

## THE RACE



### THE RESULTS (56 LAPS)

1st	Lewis Hamilton Mercedes	1h 38m 12.618s
2nd	Nico Rosberg Mercedes	+4.520s
3rd	Daniel Ricciardo Red Bull	+19.692s
4th	Sebastian Vettel Ferrari	+43.134s
5th	Fernando Alonso McLaren	+93.953s
6th	Carlos Sainz Toro Rosso	+96.124s
7th	Felipe Massa Williams	+1 lap
8th	Sergio Pérez Force India	+1 lap
9th	Jenson Button McLaren	+1 lap
10th	Romain Grosjean Haas	+1 lap
11th	Daniil Kvyat Toro Rosso	+1 lap
12th	Kevin Magnussen Renault	+1 lap*
13th	Jolyon Palmer Renault	+1 lap
14th	Marcus Ericsson Sauber	+1 lap
15th	Felipe Nasr Sauber	+1 lap
16th	Valtteri Bottas Williams	+1 lap
17th	Pascal Wehrlein Manor	+1 lap
18th	Esteban Ocon Manor	+2 laps

\*Includes five-second time penalty for leaving the track and gaining a lasting advantage

### Retirements

Kimi Räikkönen Ferrari	38 laps – loose wheel
Max Verstappen Red Bull	28 laps – gearbox
Esteban Gutiérrez Haas	16 laps – brakes
Nico Hülkenberg Force India	1 lap – collision

### THROUGH SPEED TRAP (QUALIFYING)



**Fastest:** Pascal Wehrlein, 212.01mph  
**Slowest:** Daniil Kvyat, 202.75mph

### TYRE COMPOUNDS USED



### CLIMATE

Sunny 28°C

### TRACK TEMP

36°C

## FASTEST LAP



Sebastian Vettel, lap 55, 1min 39.877s

## FASTEST PITSTOP



Sergio Pérez, 23.350s (entry to exit)

## DRIVERS' STANDINGS

1st	Nico Rosberg Mercedes	331pts
2nd	Lewis Hamilton Mercedes	305pts
3rd	Daniel Ricciardo Red Bull	227pts
4th	Sebastian Vettel Ferrari	177pts
5th	Kimi Räikkönen Ferrari	170pts
6th	Max Verstappen Toro Rosso/Red Bull	165pts
7th	Sergio Pérez Force India	84pts
8th	Valtteri Bottas Williams	81pts
9th	Nico Hülkenberg Force India	54pts
10th	Fernando Alonso McLaren	52pts
11th	Felipe Massa Williams	49pts
12th	Carlos Sainz Toro Rosso	38pts
13th	Romain Grosjean Haas	29pts
14th	Daniil Kvyat Red Bull/Toro Rosso	25pts
15th	Jenson Button McLaren	21pts
16th	Kevin Magnussen Renault	7pts
17th	Jolyon Palmer Renault	1pt
18th	Pascal Wehrlein Manor	1pt
19th	Stoffel Vandoorne McLaren	1pt
20th	Esteban Gutiérrez Haas	0pts
21st	Marcus Ericsson Sauber	0pts
22nd	Felipe Nasr Sauber	0pts
23rd	Rio Haryanto Manor	0pts
24th	Esteban Ocon Manor	0pts

## CONSTRUCTORS' STANDINGS

1st	Mercedes	636pts	9th	Renault	8pts
2nd	Red Bull	400pts	10th	Manor	1pt
3rd	Ferrari	347pts	11th	Sauber	0pts
4th	Force India	138pts			
5th	Williams	130pts			
6th	McLaren	74pts			
7th	Toro Rosso	55pts			
8th	Haas	29pts			



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# RACE DEBRIEF

by Stuart Codling

## Mexican Grand Prix

30.10.2016 / Autódromo Hermanos Rodríguez, Mexico City



# Success isn't a four-letter word

Hamilton's win in Mexico was as impressive as Sebastian Vettel's command of Anglo-Saxon

**Bernie Ecclestone** has long lamented the damaging effect of regular Mercedes one-two finishes on Formula 1's viewing figures, so he must surely have experienced a frisson of delight this weekend. Yes, Lewis Hamilton won from pole position in Mexico, controlling the race beautifully after an opening-lap scare, but in doing so he kept the world championship battle alive; and, even better, a splenetic radio rant by Sebastian Vettel ensured that the events of an otherwise relatively processional race received top billing worldwide.

The Mexican Grand Prix was a slow burner, largely because the selection of tyre compounds available pointed almost unavoidably to a one-stop race. Red Bull tried to buck the trend with an opportunistic early stop for Daniel Ricciardo, taking advantage of a Safety Car period, but in the final reckoning he (on track at least) crossed the line in the same position he would probably have occupied had he stopped just once.

Hamilton was on edge form this weekend, undeniably fastest in first practice but then failing to top the timesheets until qualifying. Even when he set pole position, tidily clear of his Mercedes team-mate and championship rival Nico Rosberg, he moodily dismissed Q3 as "my worst session this weekend". Rosberg, though, never quite got on top of this track and was fourth in the final qualifying session until a final all-out effort elevated him to a surprising second place ahead of the two Red Bulls.

Most teams viewed the soft Pirelli as the ideal tyre on which to start the race, to be followed by a long stint on mediums. That all depended on whether or not you could make the soft tyre work in Q2, and a combination of the weather conditions and the rough, low-grip nature of the Mexico track's asphalt militated against that. Mercedes went for softs, as did Ferrari (Kimi Räikkönen tried supersofts for his second run in Q2, but had to back out of the lap because of

traffic). Red Bull went for supersofts. Williams, desperate to reclaim fourth place in the championship from Force India, tried softs but just couldn't get them to work, and had to use supersofts to make it through to Q3.

From pole, Hamilton got away easily, but then locked his right-front into Turn 1 – he blamed a glazed brake disc, which grabbed suddenly – and skittled over the grass. He retained his lead, though, thanks in part to Rosberg and Max Verstappen banging wheels as they fought over second place. The real damage came as the rest of the field funnelled through and Esteban Gutiérrez tagged the back wheel of Pascal Wehrlein's Manor, pitching him into the Sauber of Marcus Ericsson. Wehrlein was out on the spot and the Virtual Safety Car was immediately deployed, swiftly followed by the on-track version, to enable swift removal of the mess.

Ricciardo pitted for mediums under the Safety Car, but he was going to have to make progress

to make this strategy work. Emerging outside the top ten, he quickly made his way up through the field until he came up behind a four-car battle for sixth, led by Vettel.

Not only had both the Ferraris qualified behind the two Red Bulls, they had also fallen behind Nico Hülkenberg's Force India – and Vettel, meanwhile, was stuck behind Felipe Massa's Williams. When those cars pitted for medium rubber they freed up the Ferraris to push on, and it was in this part of the stint that Vettel started to lay down the groundwork for his podium challenge.

By stretching his soft tyres out to lap 31, during which time they had been around the Autodromo Hermanos Rodríguez 36 times, including their qualifying duties, Vettel held onto his lead for several laps. When he eventually did dive into the pits to change rubber, the strategy paid off since he emerged from his one and only stop ahead of Hülkenberg.

Hamilton resumed his lead and was never headed thereafter – and Rosberg never got close. He had his own worries, as Verstappen closed in and pressured him in the second half of the race. Verstappen had one shot at Rosberg, when Carlos Sainz baulked him at Turn 1 on lap 49, but Verstappen's subsequent lunge at the Mercedes at Turn 4 came to nothing.

Räikkönen fell out of contention for the podium when Ferrari called him in for a second stop that left him bottled up behind Hülkenberg for 16 laps, but Vettel closed on Verstappen in the final laps, joined by Ricciardo, who had made a second stop and taken on new soft tyres that gave him a great turn of pace.

With just four laps still to run, Verstappen overshot Turn 1 and rejoined the track ahead of Vettel, who immediately began to protest, as seems to be his wont these days. Red Bull told Verstappen that he should “probably” cede position to Vettel, but he didn't, and as Vettel proceeded to turn the airwaves blue, Ricciardo closed to within DRS range and made his own lunge at Turn 4. The two nearly-but-not-quite touched; Vettel remained ahead of Ricciardo but behind Verstappen, and that appeared to be that.

Only it wasn't. Verstappen was handed a five-second time penalty, and had to suffer the indignity of being hauled out of the pre-podium 'green room' to make way for Vettel. And then Vettel, too, went through the revolving door – albeit three hours after the flag – when the stewards judged his defence against Ricciardo to have been dangerous and erratic.

Ricciardo was the beneficiary of Vettel's ten-second penalty, but was he pleased? Hell, no. He'd missed the chance of doing his 'shoey' routine on “the best podium of the year”. 🍷

## The story of the race

> Hamilton leads from pole, but locks up at Turn 1, skates across the grass, and holds onto his lead

### AUTÓDROMO HERMANOS RODRÍGUEZ



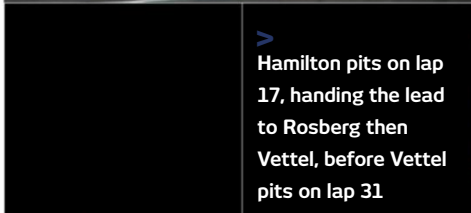
> Gutiérrez tags Wehrlein, who spins into Ericsson. Wehrlein retires and the VSC is deployed



> With the Safety Car on track, Ricciardo is the only front-runner to take a gamble and stop early



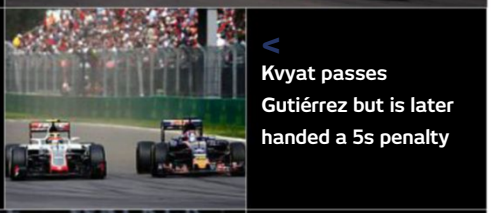
< Sainz is handed a 5s penalty for forcing Alonso off track between Turns 3 and 4 on the opening lap



> Hamilton pits on lap 17, handing the lead to Rosberg then Vettel, before Vettel pits on lap 31



< Verstappen attempts to pass Rosberg at Turn 4 on lap 50, but locks up and runs wide



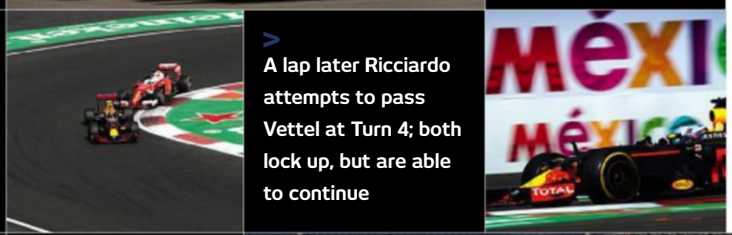
< Kvyat passes Gutiérrez but is later handed a 5s penalty



> On lap 67 Räikkönen goes outside Hülkenberg at T4. Hülkenberg spins and drops to seventh



> With Vettel right behind him on lap 68, Verstappen runs wide at Turn 1 but holds on to P3



> A lap later Ricciardo attempts to pass Vettel at Turn 4; both lock up, but are able to continue



> After 71 laps, Hamilton wins from Rosberg, while the dispute over P3 rages on



# Mexican Grand Prix stats

All you need to know from the weekend at Mexico City...

## THE GRID



### 1. HAMILTON

MERCEDES

1min 18.704secs Q3



### 3. VERSTAPPEN

RED BULL

1min 19.054secs Q3



### 5. HÜLKENBERG

FORCE INDIA

1min 19.300secs Q3



### 7. VETTEL

FERRARI

1min 19.381secs Q3



### 9. MASSA

WILLIAMS

1min 20.032secs Q3



### 11. ALONSO

MCLAREN

1min 20.282secs Q2



### 13. BUTTON

MCLAREN

1min 20.673secs Q2



### 15. ERICSSON

SAUBER

1min 21.536secs Q2



### 17. GUTIÉRREZ

HAAS

1min 21.401secs Q1



### 19. NASR

SAUBER

1min 21.692secs Q1



### 21. PALMER\*

RENAULT

NO TIME IN Q1



### 2. ROSBERG

MERCEDES

1min 18.958secs Q3



### 4. RICCIARDO

RED BULL

1min 19.133secs Q3



### 6. RÄIKKÖNEN

FERRARI

1min 19.376secs Q3



### 8. BOTTAS

WILLIAMS

1min 19.551secs Q3



### 10. SAINZ

TORO ROSSO

1min 20.378secs Q3



### 12. PÉREZ

FORCE INDIA

1min 20.287secs Q2



### 14. MAGNUSSEN

RENAULT

1min 21.131secs Q2



### 16. WEHRLIN

MANOR

1min 21.785secs Q2



### 18. KVYAT

TORO ROSSO

1min 21.454secs Q1



### 20. OCON

MANOR

1min 21.881secs Q1



### GROSJEAN\*\*

HAAS

1min 21.916secs Q1

\*Permitted to start by stewards \*\*Required to start from pitlane after car was modified while under parc fermé conditions

## THE RACE



### THE RESULTS (71 LAPS)

1st	Lewis Hamilton Mercedes	1h 40m 31.402s
2nd	Nico Rosberg Mercedes	+8.354s
3rd	Daniel Ricciardo Red Bull	+20.858s
4th	Max Verstappen Red Bull	+21.323s*
5th	Sebastian Vettel Ferrari	+27.313s**
6th	Kimi Räikkönen Ferrari	+49.376s
7th	Nico Hülkenberg Force India	+58.891s
8th	Valtteri Bottas Williams	+65.612s
9th	Felipe Massa Williams	+76.206s
10th	Sergio Pérez Force India	+76.798s
11th	Marcus Ericsson Sauber	+1 lap
12th	Jenson Button McLaren	+1 lap
13th	Fernando Alonso McLaren	+1 lap
14th	Jolyon Palmer Renault	+1 lap
15th	Felipe Nasr Sauber	+1 lap
16th	Carlos Sainz Toro Rosso	+1 lap***
17th	Kevin Magnussen Renault	+1 lap
18th	Daniil Kvyat Toro Rosso	+1 lap*
19th	Esteban Gutiérrez Haas	+1 lap
20th	Romain Grosjean Haas	+1 lap
21st	Esteban Ocon Manor	+2 laps

\*Includes five-second penalty for leaving the track and gaining a lasting advantage \*\*Includes ten-second penalty \*\*\*Includes five-second penalty for forcing another driver off the track

### Retirements

Pascal Wehrlein Manor 0 laps – accident

### THROUGH SPEED TRAP (QUALIFYING)



Fastest: Felipe Massa, 227.36mph

Slowest: Daniil Kvyat, 216.42mph

### TYRE COMPOUNDS USED



### CLIMATE

Sunny 20°C

### TRACK TEMP

50°C

### FASTEST LAP



Daniel Ricciardo, lap 53, 1min 21.134s

### FASTEST PITSTOP



Lewis Hamilton, 21.709s (entry to exit)

### DRIVERS' STANDINGS

1st	Nico Rosberg Mercedes	349pts
2nd	Lewis Hamilton Mercedes	330pts
3rd	Daniel Ricciardo Red Bull	242pts
4th	Sebastian Vettel Ferrari	187pts
5th	Kimi Räikkönen Ferrari	178pts
6th	Max Verstappen Toro Rosso/Red Bull	177pts
7th	Sergio Pérez Force India	85pts
8th	Valtteri Bottas Williams	85pts
9th	Nico Hülkenberg Force India	60pts
10th	Fernando Alonso McLaren	52pts
11th	Felipe Massa Williams	51pts
12th	Carlos Sainz Toro Rosso	38pts
13th	Romain Grosjean Haas	29pts
14th	Daniil Kvyat Red Bull/Toro Rosso	25pts
15th	Jenson Button McLaren	21pts
16th	Kevin Magnussen Renault	7pts
17th	Jolyon Palmer Renault	1pt
18th	Pascal Wehrlein Manor	1pt
19th	Stoffel Vandoorne McLaren	1pt
20th	Esteban Gutiérrez Haas	0pts
21st	Marcus Ericsson Sauber	0pts
22nd	Felipe Nasr Sauber	0pts
23rd	Rio Haryanto Manor	0pts
24th	Esteban Ocon Manor	0pts

### CONSTRUCTORS' STANDINGS

1st	Mercedes	679pts	9th	Renault	8pts
2nd	Red Bull	427pts	10th	Manor	1pt
3rd	Ferrari	365pts	11th	Sauber	0pts
4th	Force India	145pts			
5th	Williams	136pts			
6th	McLaren	74pts			
7th	Toro Rosso	55pts			
8th	Haas	29pts			



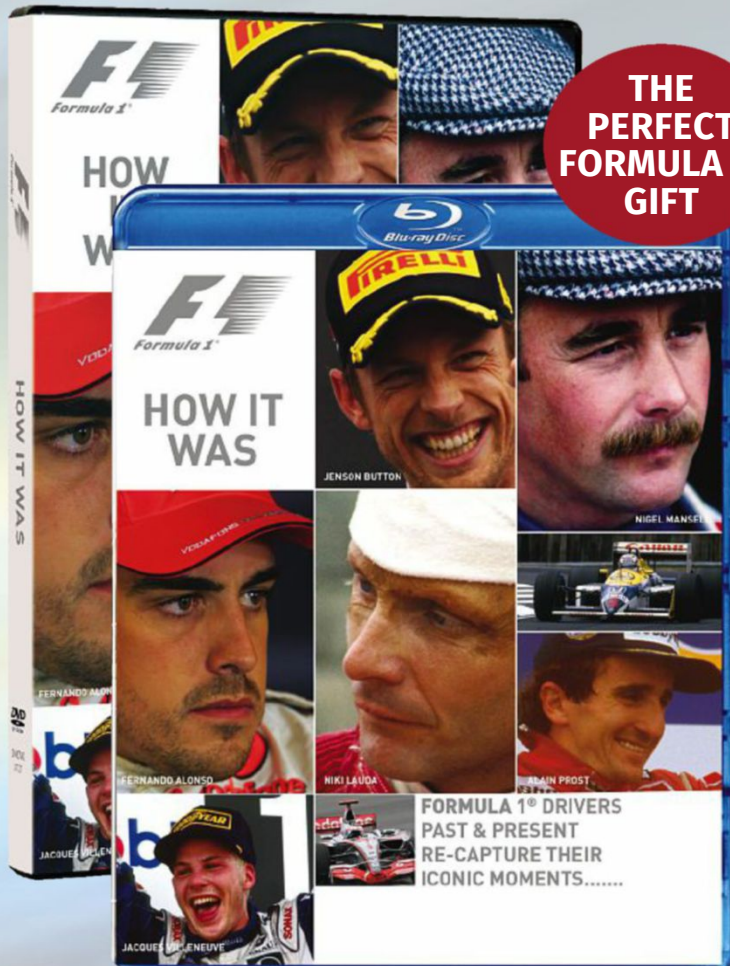
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1997	European Grand Prix	Jacques Villeneuve
1999	European Grand Prix	Johnny Herbert
2000	French Grand Prix	David Coulthard
2007	Grand Prix of Europe	Fernando Alonso
2011	Canadian Grand Prix	Jenson Button

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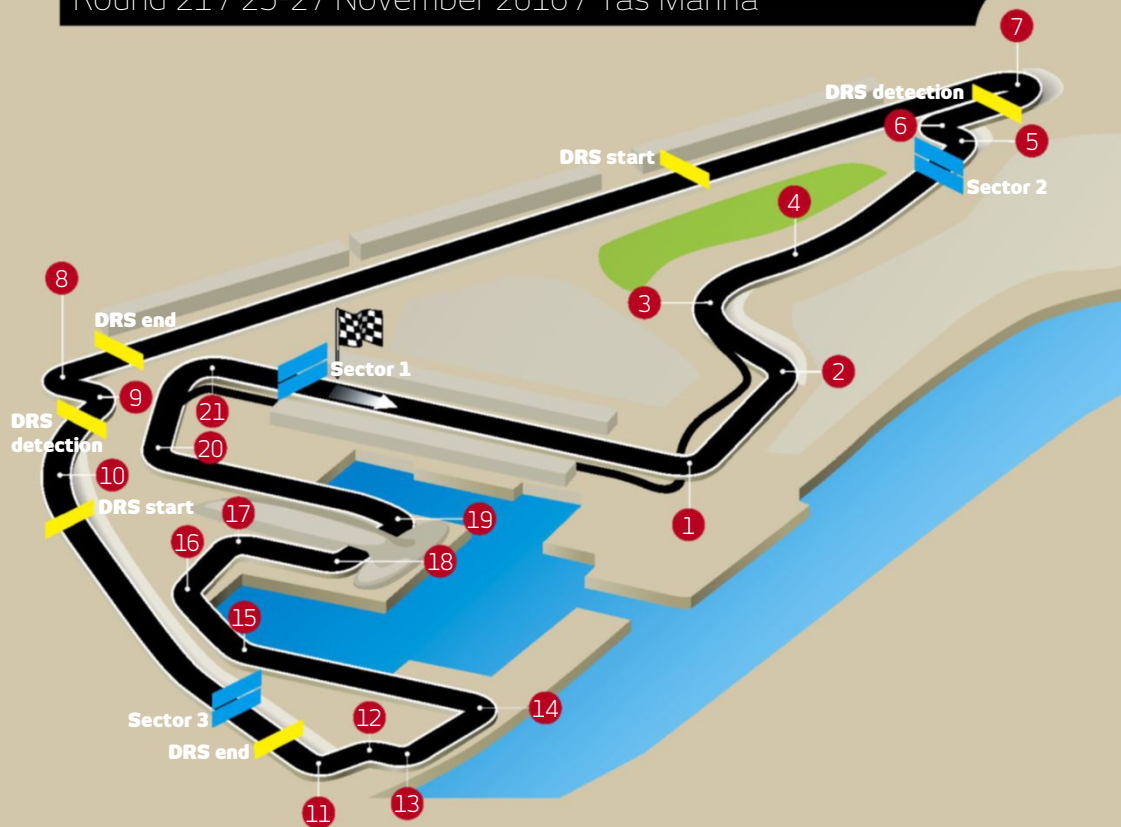


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# The Abu Dhabi GP preview

Round 21 / 25-27 November 2016 / Yas Marina



## ABU DHABI GP RACE DATA

**Circuit Name** Yas Marina Circuit  
**First GP** 2009  
**F1 races held** 7  
**Circuit length** 3.451 miles  
**Race distance** 189.739 miles (55 laps)  
**Direction** Anticlockwise  
**Winners from pole** 2

## TIMETABLE (UK TIME)

**Friday 25 November**  
**Practice 1** 09:00-10:30  
**Practice 2** 13:00-14:30  
**Saturday 26 November**  
**Practice 3** 10:00-11:00  
**Qualifying** 13:00-14:00  
**Sunday 27 November**  
**Race** 13:00  
**Live coverage**  
 Sky Sports F1 & Channel 4

## A DAZZLING DESERT DISPLAY AT THE SEASON'S GRAND FINALE

When the Yas Marina circuit was built in 2009, the cost of construction was believed to be a cool £800million. But that was a drop in the ocean for a country that aspired to be the destination of choice for both big business and travellers to the Gulf region.

While the track they built in Abu Dhabi's desert isn't the toughest driving challenge ever conceived by designer Hermann Tilke, the facility is exemplary. The garages are spacious, the Viceroy Hotel – with its multi-coloured LED roof that spans the track – is plush, and the marina and endless sunshine create a mini-Monaco ambience.

The F1 season finale, held in twilight, looks spectacular on TV, and, as a result, more fans are making the trip over to the Middle East to enjoy the race. If you want to escape the chill of a European winter then a November trip to Abu Dhabi can be a very welcome reprieve.



The LED grid shell roof of the Viceroy Yas Hotel lights up as night closes in

## WHAT GOES ON TOUR...

The first I heard of Abu Dhabi's plans to build a brand new grand prix circuit was when I was invited to fly to the Gulf first class on their national carrier, Etihad, to attend a press conference in February 2007.

We were picked up in a limousine from the runway and taken on to our accommodation for the weekend: the seven-star Emirates Palace Hotel. During the trip there was a street demo of F1 cars and a presentation about the new Yas Marina facility. A black-tie dinner followed, with music from Jools Holland's band and Lulu.

Later in the trip, I was cornered by none other than McLaren boss Ron Dennis. As I emerged from the air-conditioned hotel lift, and prepared to step outside into the 40°C heat, he looked me up and down and, with a puzzled look on his face, sneered: "Sweater?"

James Roberts

## WHAT HAPPENED IN LAST YEAR'S RACE...?

**Winner** Nico Rosberg  
**Margin of victory** 8.271s  
**Pole position** 1m 40.237s, N Rosberg  
**Fastest lap** 1m 44.517s, L Hamilton  
**Race leaders** 2  
**Safety Cars** 0  
**Pitstops** 42  
**Overtakes** 26



The title had already been won by Lewis Hamilton in Austin, but team-mate Nico Rosberg continued his barnstorming finish to 2015, converting his sixth pole in a row to a third successive win. This was despite a strategy gamble from Hamilton whereby he delayed his second stop for fresher tyres at the end. Kimi Räikkönen was third ahead of Ferrari team-mate Sebastian Vettel, who had recovered from P15.



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Hamilton locks up before running wide in Mexico – and escapes a penalty

## Why punish the drivers?

The kind of penalties we've seen handed out this season have bordered on the absurd. Fifty-place grid drops in a field of 22?

During a race, stop/go penalties are probably the best way to deal with on-track incidents. But making demotions because of gearbox changes and engine replacements before a race has even started, seems to penalise the driver more than the team.

So how about a deduction in points in the constructors' championship instead? This would be a more effective way to penalise the team, especially with final positions in the table being worth so much financially. It would also make teams more aware of how careful they must be in managing resources throughout the season.

**Adrian Townsend**  
Nottinghamshire, UK

## One rule for some

I do not understand how Lewis Hamilton failed to get a penalty for his off-track excursion in Mexico, given that Max Verstappen was handed one in the same race.

Max has been pushing the boundaries for a while, but I'd expect this from a young pup. He's got a point to prove and, let's not forget, he's been knocking around for less than two seasons.

Maybe Lewis needs reminding of the rules, as do the stewards – along with the fact the rules about staying on the grey stuff should be applied equally to *all* drivers.

This sort of thing means every year I fall more out of love with F1.

**Daniel Heathcote**  
By email

## Protect the classics

Following Liberty Media's purchase of F1 and the installation of Chase Carey as chairman, I hope they will address some of the concerns that have been overlooked during Bernie's premiership.

The first, no doubt, is already on their radar – fairer funding across the grid. Over the past couple of seasons we have seen some great results from smaller teams, such as Force India and Sauber. They've put up a good fight, and excellent racing has, in turn, been rewarded with decent points. However, these

smaller teams have nowhere near the same revenue to which the top three are accustomed. And as long as they continue to get a raw deal, they're unlikely to pose any serious threat to the top half of the grid.

Also, some new regulations have been unnecessary – the introduction of fuel limits being a perfect example. While I appreciate the intention for F1 to show innovation and leadership in green technology, when this comes at the expense of restrained driving, the sport ultimately suffers.

Finally, over the past few years, new circuits have been added to the calendar, replacing traditional tracks. I'd love to see F1 supporting the classics, perhaps by introducing a touring fixture to the calendar.

This GP could change circuit each year, visiting traditional venues that don't have the funds to host a race every year, but could do so occasionally with support from the top. The revival, I'm sure, would prove popular with the fans and demonstrate a commitment to the roots of the sport.

**Sophie Dean**  
By email

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## NEXT MONTH...



## ALL HAIL THE CHAMPION!

Four titles for Lewis, or a first for Nico? We celebrate 2016's ultimate victor

### PLUS\*

- > Damon Hill gets back in the cockpit of his 1996 title-winner
- > The F1 Racing Awards: you've voted in the thousands for your best team, car, driver... and more
- > Farewell, Felipe! We follow Williams' Massa, at his last ever Brazilian Grand Prix weekend
- > Carlos Sainz gets a grilling

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DAMON HILL

# KING OF THE HILL

Cockpit savvy from the 1996 world champ, exclusively in *F1R*

**J**ust for one moment, imagine you are Lewis Hamilton. You can't, can you? None of us can. It must be like being on the moon and looking back at planet earth.

F1 is one of the most followed sports in the world, and Lewis is the face that greets the world for every race. He is now an undeniable phenomenon. Fifty wins and he's only 31. Can he catch Schumi, on 91? Whatever. Prost, on 51, will probably be overtaken before this article gets read by most of you (barring the most extraordinary), leaving Lewis ahead of all but the furthest outpost of F1 history, at least, on the Beaufort Win Scale.

In terms of championships, he's merely ordinary – one of the many three- to four-time world champions. But in terms of fame and image, he is F1's answer to David Beckham, Tiger Woods, Elvis... whoever. He's mega-famous and wants to be more famous for being himself than for what has made him famous: driving fast cars faster than anyone else. He reminds us that although he is *of* F1, he does not *belong* to F1. He'll do as he pleases and has the wealth to facilitate it. Where he goes, we cannot follow. He's not like you and me.

"Lewis reminds us that although he is *of* F1, he does not *belong* to F1"

## Fame is the name of the game... for some

When I was young, a journalist asked me what I wanted to do when I was older. I said: "I want to be famous," before adding: "Doesn't everyone?" Hmm. But I was making an understandable assumption, being young and naive, that fame meant the world was your oyster. After all, my father was famous and he seemed to be having a ball. Famous people enjoyed super-privileged status back then, and there was no mobile-phone Stasi to snitch on your every move. Doors opened, normal rules didn't apply.

Society made exceptions for the famous. Their face and their reputation was all they needed. The love of the public legitimised their freedoms. A celebrity would be excused most excesses, most extravagances, most dips in performance. The trick, though, was not to abuse this exemption and always to keep one foot on the ground, to remember you were only human, no matter what extraordinary talent you may be revelling in. To wink at the devotees as if to say: "I'm enjoying this as much as you. So thanks!"

But sometimes, we make this impossible for the individual concerned. The annals of fame are littered with the empty husks of the gifted and beautiful. Somehow we are never totally satisfied by their offerings, and they are never quite able to attain the perpetual perfection for which they constantly strive. Fame can destroy humans. It ought to carry a health warning. Of course there are moments, when the odds are beaten, the fates denied and the prophecies fulfilled. Post-Austin, this is where we are at with Lewis. He set this as his goal, to be the best, to get to the top, to be a star quite unlike all the rest.

Thanks to the quaint anachronisms of the print media, I will have to project forward to

one of two possible championship outcomes. I don't know if Lewis will have pulped Nico into mush – confirming his F1 genius and value – or gone skiing without even a backwards glance, as he suggested he would do in Austin should he not win the title. As if the 2016 season were an amusing bauble that entertained him for a while between ski seasons.

Whatever has happened, Lewis has already written the conclusion. If he fails to win he will still have won, because it won't have escaped anyone's attention (partly because he keeps reminding everyone) that his mysterious unreliability has cost him dear. When the car keeps going, invariably he has beaten Nico (except for the times when he couldn't, of



Whether he wins this year's championship or not, Lewis is a star quite unlike the rest with a passionate and loyal fan base

which there are a number, Baku springing immediately to mind). But overall, in the game of F1 snakes and ladders he's been bitten by too many snakes. And that's just bad luck. Right?

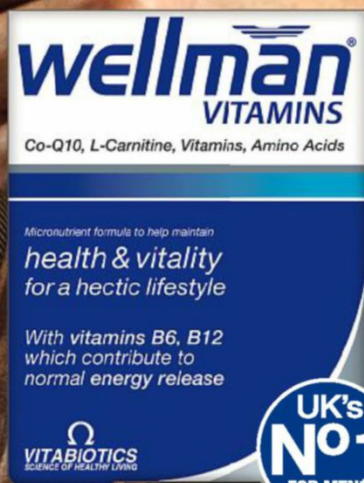
If he is champion? Well, if I could imagine being Lewis Hamilton, which I can't, I'd think I was a living god and start accepting sacrifices – the still-beating hearts of those who have denied me. I'd cut out the tongues of the blasphemers and unbelievers. I'd block them, un-friend them, deny them access and get my most zealous followers to have them crucified along the way to my ski chalet. In short, I'd become a vengeful god and who could blame me? Good thing for everyone I wasn't cursed with an overabundance of talent then... 🙄

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