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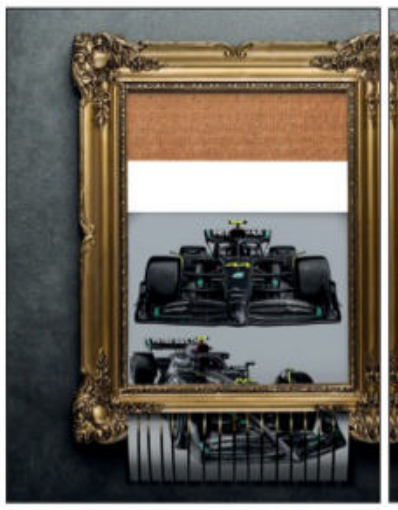


RIP IT UP AND START AGAIN

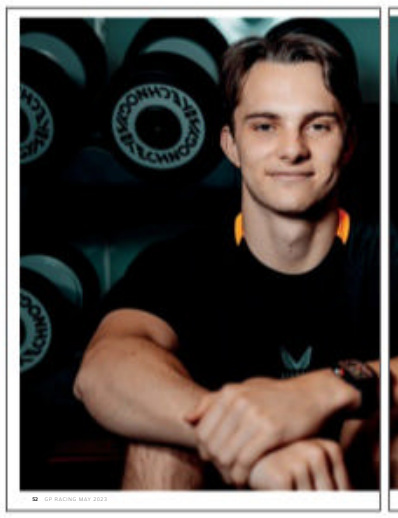
Straight after qualifying for the first grand prix of the year, Mercedes boss Toto Wolff made a staggering admission: his team needed a complete change of car concept to return to winning ways. But what does this actually mean? *GP Racing* tech columnist **Pat Symonds** has over 40 years' experience in engineering Formula 1 cars, including several championship winners, and well knows what it's like to realise when an idea isn't working...

THE CLONE WARS

At the start of the season, senior Red Bull figures openly claimed the new Aston Martin was a copy of the 2022 championship-winning RB18. As we reveal here, while such accusations are empty bluster, the truth is that there is a profound Red Bull influence – just not in the way you might expect...

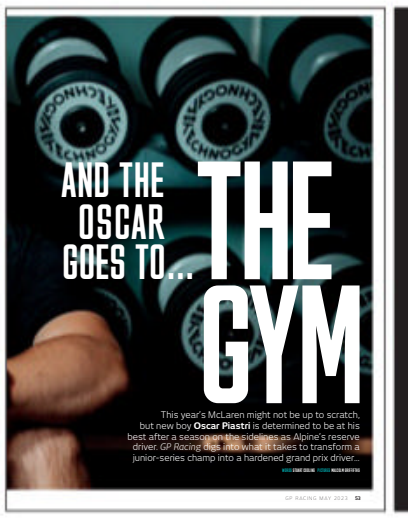
LET THE RECORD SHOW that when Aston Martin whipped the covers off its 2023 challenger way back on 15 February, claims the team might have simply copied Red Bull were far thinner on the ground. It was an extremely convincing testing display that ignited the gamesmanship as rivals began to insinuate last year's title-winning RB18 had been gone over with tracing paper. The furore only intensified when Fernando Alonso humbled Mercedes and Ferrari to kick off the campaign with consecutive podiums.

In the immediate aftermath of Alonso clashing third behind runaway victor Max Verstappen and Sergio Pérez in the Bahrain opener, Pérez twice joked Red Bull had finished 1-2-3. Then team advisor Helmut Marko pointedly asked: "Can you copy in each detail without having documentation of our car?" Perhaps persuaded



AND THE OSCAR GOES TO... THE GYM

This year's McLaren might not be up to scratch, but new boy **Oscar Piastri** is determined to be at his best after a season on the sidelines as Alpine's reserve driver. *GP Racing* digs into what it takes to transform a junior-series champ into a hardened grand prix driver...



TWO BECOME ONE

In 2003 there were no live streams of Formula 1 races, no instant replay, no app with live timing data – and most definitely no Twitter to provide a platform for noisy post-race post-mortems. This is the previously untold inside story of how a humble VHS video tape enabled the Jordan team to claim a momentous win – five days after the flag...

Twenty years ago this month, the FIA didn't realise it had cocked up the finishing order of the Brazilian Grand Prix. It took the persistent detective work of the IT team at Jordan Grand Prix to prove Giancarlo Fisichella had run at Interlagos and oblige McLaren and Kimi Räikkönen to hand back the Brazilian trophy at Imola two weeks later.

This administrative muddle ran true to Formula 1 form at the time. Ferrari's Michael Schumacher, the pre-season favourite, languished a distant eighth in the championship after three races, a situation as unlikely as Jordan winning a grand prix. Eddie Jordan would have celebrated a point for eighth place, never mind the 10 that eventually came his way. The 2003 season was all about survival for Jordan, a mission seemingly made even more difficult just before the start in Brazil when mix-added to the track's inherent hazards. The Jordan technical crew, led by Gary Anderson, saw it differently.

The unpredictable conditions would allow Anderson to throw the strategic dice after Fisichella had claimed an impressive eighth on the grid (the Italian having qualified 13th and 14th previously in Australia and Malaysia). With each driver limited to a single lap of qualifying (new for 2003), Fisichella's brave performance was being dismissed by those who believed the Jordan was running light and taking temporary advantage of another substantial change to the regulations.

In a bid to bring variety and deal with concerns about Ferrari and Schumacher winning the title for a fourth successive year, this first iteration of the pure-fuel rule in operation today meant competitors had to qualify their cars in the condition in which they intended to start the race. With refuelling allowed, this meant a low fuel load would bring speed during qualifying on the understanding that the necessary and early stop for fuel could heavily compromise race strategy. As the cuts fell, however, all bets were off – as the race should have been, too, given the biblical proportions of the Brazilian deluge.

It wasn't long before the inside of Turn 3 at the bottom of the Senna Esses and like a bath plughole that had become blocked by drivers tearing out their hair. A wet-weather tyre with grooves big enough to hold Bernie Ecclestone's wallet would have had difficulty cutting through the river of water. Even when no less a luminary than Schumacher joined the wrestler's yard on the outside of the corner, officials saw fit to have the race continue as if nothing had happened.

The Jordan crew, meanwhile, had been playing the odds by bringing in Fisichella at the end of lap eight. Giancarlo wasn't best pleased with having a full load of fuel to add to his difficulties in such treacherous conditions but, as the race continued and the rain eased, he began to see the wisdom of the tactic as others either crashed or made their pitstops and his race position went into single figures. When Ruben Barrichello, having started from pole, suffered the heartbreak of running out of fuel while leading on lap 46, Fisichella was elevated to fourth, which quickly became third when Ralf Schumacher pitted his Williams-BMW.

Led by the McLarens of David Coulthard and Räikkönen, Fisichella had visions of actually improving his unexpected potential podium position, particularly when Coulthard dived into the pits for a second scheduled stop. No one was sure precisely how much longer the grand prix would last thanks to Safety Car interventions having extended the running time. It was possible the race could be stopped at three-quarter distance (74 laps – which wasn't far off) when maximum points would be awarded.

Fisichella didn't care about the precise number of points as he took the lead when Räikkönen ran wide at the beginning of lap 54. They finished the lap 0.9 seconds apart with the Renault of Fernando Alonso chasing hard a distance behind in third. Then came another crash, this one more dramatic than anything that had gone before.

Mark Webber was looking for ways to keep his worn intermediates alive when the Jaguar let go as he exited the rise onto the pit straight.

SECTOR 2

F1 PRO

IGNITION

MAY 2023

Stuart Codling

Contributors

PAT SYMONDS
In addition to his regular column (p24), Pat has analysed Mercedes' woes over the design of the W14 and what its options are (p32)

MATT KEW
Autosport's F1 editor agrees that Aston Martin's AMR23 is influenced by Red Bull, just not in the way you think (p42)

MAURICE HAMILTON
A tale of how a video tape won a GP must be a late April Fool? Surely? Read Maurice's story of the 2003 Brazilian GP to find out that it isn't (p62)

MALCOLM GRIFFITHS
'Malcy' made the short journey to Woking to snap McLaren new boy Oscar Piastri and his workout regime in the MTC gym (p52)

Mercedes opts for drastic surgery

There's no question the Mercedes W14 is a work of engineering art. While much reportage continues to fixate upon on the 'size zero' sidepods it's around the rear of the car – particularly beneath the skin – where the real cleverness and innovation has been focused, as Pat Symonds explains on page 32. Despite the W14's seemingly improved showing in Melbourne, though, Mercedes remains committed to rethinking the very principles of its car from the ground up.

You may find yourself asking why. The fact is that teams amply stocked with brilliant minds aren't easily fooled by outlier events (although Pat does raise an interesting question over whether victory at Interlagos last year persuaded Mercedes its car concept had more potential). For all that George Russell and Lewis Hamilton headed the Ferraris and Aston Martins in qualifying at Albert Park and passed Max Verstappen's Red Bull at the start of the race, Max could afford to be risk-averse on lap one because he knew he could "come sailing by" – to quote Lewis – as soon as DRS was enabled. While Russell likened driving the W14 to "riding a lame horse", Mercedes boss Toto Wolff described the RB19's straightline speed as "mind-boggling".

Hence the realisation within Mercedes that drastic change is required. A car such as the W14, which exists for the majority of the time on a knife edge of performance, cannot maintain a championship challenge against a car like the RB19, which is both benign and quick. The circumstances of Melbourne, with its changeable conditions, enabled Mercedes to access performance peaks not so easily locatable elsewhere.

There was talk, too, of the W14 working better when the team moves away from the setup directions suggested by simulations. If so, this suggests Mercedes has more than just the car to fix: if the virtual development tools are sending erroneous signals it affects both development and race-weekend optimisation.

Right at the beginning of this season, Wolff described the fundamental direction of the W14 design as "a dead-end street". How much change can be enacted in 2023 and how much must wait for 2024 remains to be seen, but what's important is the team recognises the requirement for change.

If any team can make such a transformation work quickly, it's Mercedes, hence our cover treatment. Many readers will recall the stunt perpetrated by the artist Banksy, who arranged for their picture *Girl with Balloon* to be partially shredded moments after being auctioned for £1m at Sotheby's in 2018. For all the gleeful schadenfreude at the time, three years later the remnants, retitled *Love Is In The Bin*, fetched £18.5m at the same auction house. Who's laughing now?

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F1 PARADE

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Life's a drag for McLaren

Turn 1 at Melbourne always offers you a decent perspective on who's got confidence in their car and who hasn't – especially when the weather conditions offer you, as one local snapper pithily put it, "Four seasons in one day, mate…" The MCL60 often looks a bit of a handful through slow corners, even though the drivers say drag is one of its biggest weaknesses.

Friday afternoon is where drivers often start finding the limit at corners such as Turn 1, so it's a great place to wait for an off-track moment such as this. Gravel traps are relatively rare these days and, thanks to a brief shower, a few drivers flirted with it before Lando Norris fell in.

Photographer
Simon Galloway

Where Melbourne, Australia
When 4.17pm, Friday
31 March 2023

Details Nikon Z9
600mm lens, 1/1000th @ F4

F1 PARADE
motorsport IMAGES

Respect between the F1 greats

The relationship between Lewis Hamilton and Fernando Alonso is one facet of F1 where the reality on the ground is very different from what you might believe it to be if you read those clickbait news websites which seem to churn out hysterical stories based on out-of-context quotes. Sure, they sometimes gently wind each other up in press conferences but you can see the respect on track.

I was in parc fermé as usual after the Australian GP to capture the reaction and you could tell by the body language how much Lewis and Fernando had enjoyed their duel over second place. Shame it wasn't over the lead!

Photographer
Mark Sutton

Where Melbourne, Australia
When 5.40pm, Sunday
2 April 2023

Details Nikon D6
70-200mm lens, 1/1000th @ F4.3


TeamViewer
THE RITZ-CARLTON
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cognizant

F1 PARADE

motorsport IMAGES

Against the dying of the light

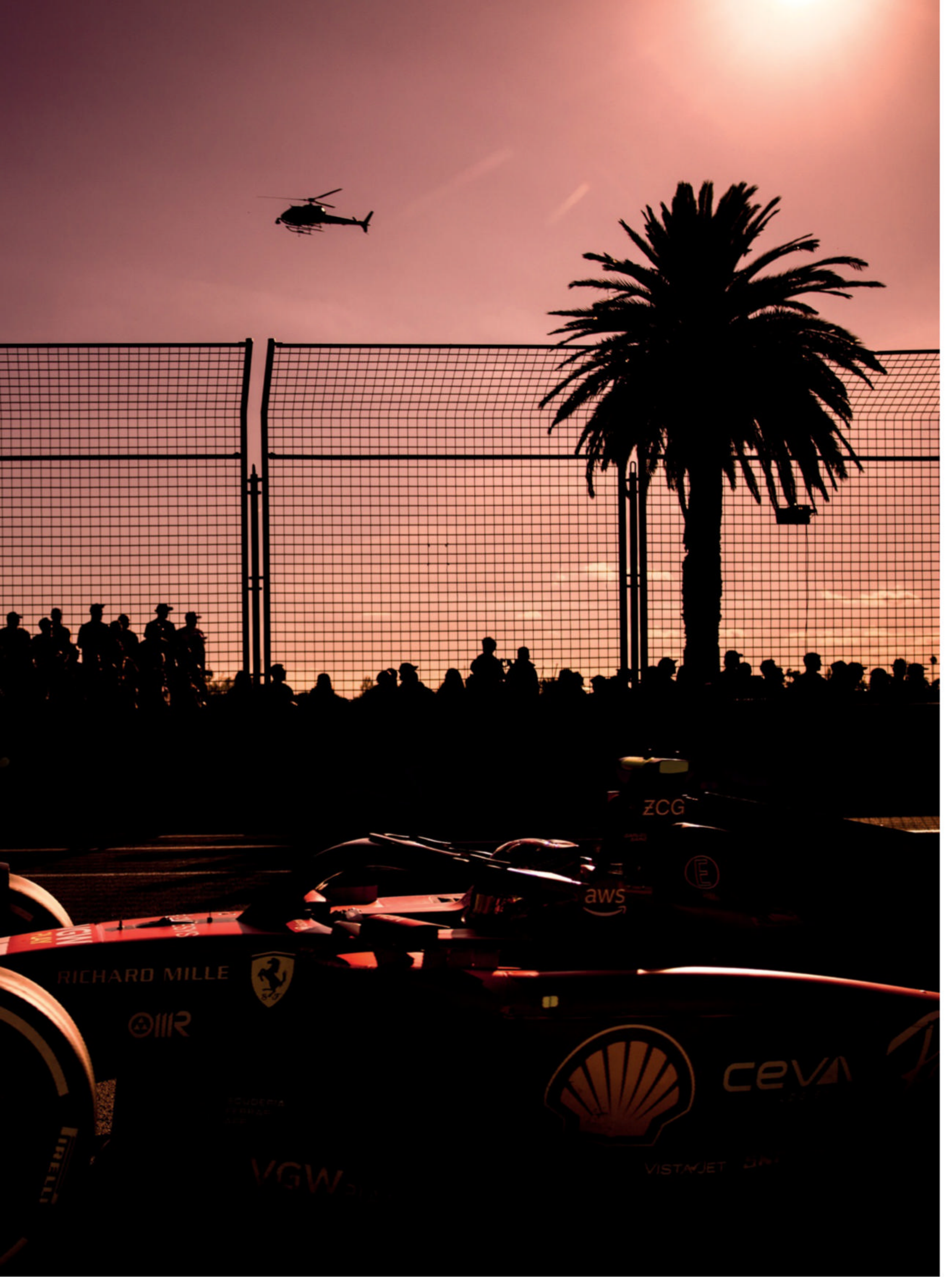
Race day was the only properly sunny one of the Australian Grand Prix weekend so I was determined to make the most of it. During the first of what turned out to be several red-flag periods I moved to a more scenic part of the track to get some shots in full sun for the race promoter, one of our clients. As it got lower in the sky the opportunities just kept coming.

The low sun pings very nicely off the scarlet Ferrari and silhouettes the fans in this shot, which I took on the long left-hander between Turns 10 and 11. This is a really fast part of the track now and it was a pleasure to capture some overtakes at a spot where it used to be quite processional.

Photographer
Zak Mauger

Where Melbourne, Australia
When 4.45pm, Sunday
2 April 2023

Details Canon EOS R3
24-70mm lens, 1/1600th @ F2.8


RICHARD MILLE
aws
ceva
VISTAJET

F1 PARADE
motorsport IMAGES

Contrasting fortunes

Mercedes has gone back to black this year. Indeed, up and down the grid there's a lot of black on the cars as teams leave various bits unpainted to save weight. That's an opportunity as well as a challenge for photographers.

As the sun got low in the sky ahead of one of many restarts in Melbourne, the long-wavelength light created an interesting effect in the Mercedes cockpit as it played across Lewis Hamilton's visor. The luminous yellow flashings of his helmet design make a vivid contrast with the dark background. Digital cameras render blacks very differently from film but the latest mirrorless cameras such as the Nikon Z9 give you a lot of scope to experiment in low light.

Photographer
Simon Galloway

Where Melbourne, Australia
When 4.42pm, Sunday
2 April 2023

Details Nikon Z9
600mm lens, 1/125th @ F4


G42
PETRO

F1 PARADE

motorsport IMAGES

Pinky blue skies away?

I like to work at the Jeddah Corniche Circuit because it brings a lot of unique selling points to Formula 1 from a photographer's point of view. The combination of the floodlit track with this area's built environment gives you a lot to work with, not just in terms of compositions but also with colour effects.

The relatively narrow pitlane makes this an ideal place for slow shutter speed panning shots. With this one you have a lot of pink dancing around in the picture because of the Alpine car and pit crew. That creates a nice effect – much better than when it goes over to blue for the rest of the season, I think...

Photographer
Steven Tee

Where Jeddah, Saudi Arabia
When 8.26pm, Sunday 19 March 2023

Details Canon EOS-R3 24-70mm lens, 1/6th @ F22

F1 INSIDER

PICTURES motorsport IMAGES

01 | **MASSA ATTACK**
Oi Lewis! Felipe wants his world title back

WHY MASSA THINKS "JUSTICE MUST BE SERVED"

01 **Felipe Massa has not given up** on his dream of becoming Formula 1 world champion – and the example being set by Fernando Alonso, who is three months younger than Massa but is still racing, has nothing to do with it. The former Sauber, Ferrari and Williams driver is exploring options to change the outcome of the 2008 championship, which he lost to Lewis Hamilton by a single point.

This was prompted by a recent interview with former F1 supremo Bernie Ecclestone. In it, Ecclestone revealed details of the controversial 2008 Singapore Grand Prix, in which Nelson Piquet Jr crashed his car to help Renault team-mate Alonso win the race.

According to Ecclestone, both he and then-FIA president Max Mosley were informed before the end of the 2008 season that the crash on lap 14 of that race had been pre-planned. The events of this day had a serious impact on the outcome of the championship: Massa was building a commanding lead before Piquet crashed and the resultant Safety Car prompted a rash of pitstops, during which Ferrari signalled Massa to leave his box while the fuel hose was still attached to his car. Having started from pole, Massa finished 13th – while eventual champion Hamilton scored six points for third place.

MASSA DECIDED AT THE TIME NOT TO PURSUE LEGAL OPTIONS TO TRY TO CHANGE THE OUTCOME

The nefarious circumstances surrounding Piquet's crash would not become public until a year later, when the sacked Renault driver made a statement confirming he had colluded with some of the team's key personnel. At this point it was no longer possible to change the championship results – which, according to the FIA's International Sporting Code, are considered final once the winner has received the trophy at the official prize-giving ceremony. Having consulted with Ferrari's lawyers, Massa decided at the time not to pursue legal options to try to change the outcome of the championship. Ecclestone's words have now persuaded him to reconsider.

"Max Mosley and I were informed during the 2008 season of what had happened in the Singapore race," Ecclestone claimed in an interview with the *F1-Insider* website. "Piquet Jr had told his father Nelson that he had been asked by the team to deliberately crash into the wall at a certain point to trigger a Safety Car and help his team-mate Alonso.

"We wanted to protect the sport and save it from a huge scandal. That's why I used angelic tongues to persuade my former driver Nelson Piquet to keep calm for the time being.

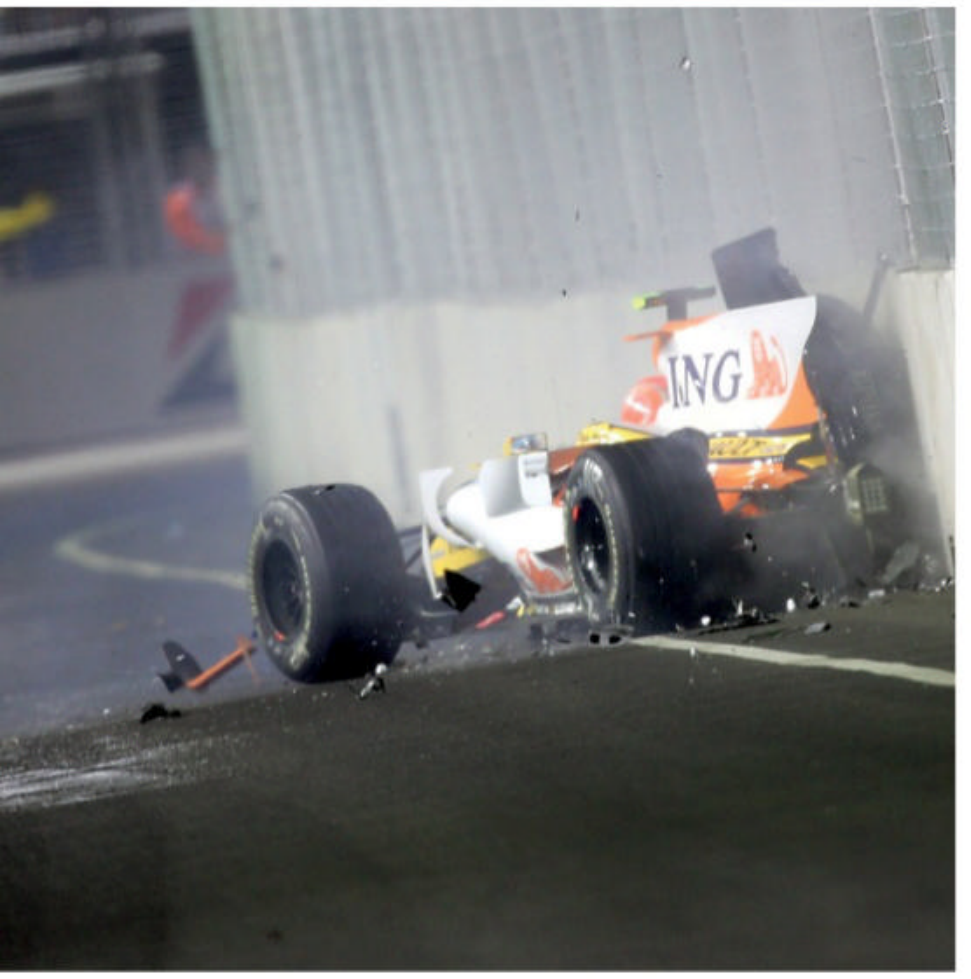
"Back then, there was a rule that a world championship classification after the FIA awards ceremony at the end of the year was untouchable. So, [Lewis] Hamilton was presented with the trophy and everything was fine.

"We had enough information in time to investigate the matter. According to the statutes, we should have cancelled the race in Singapore under these conditions."

This final revelation has understandably made Massa very angry – after all, if the race in Singapore had been annulled, he

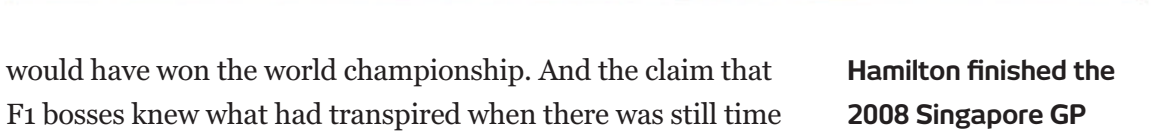
PICTURES: STEVE ETHERINGTON; ZAK MAUGER; MOTORSPORT IMAGES ARCHIVE

Lewis Hamilton was happy to see Felipe Massa at last year's São Paulo GP, but might have a different view if he lost his 2008 title to the Brazilian...



Piquet's crash (left) brought out the Safety Car. It helped team-mate and eventual race winner Fernando Alonso, but resulted in a botched pitstop for Massa (below)

Ecclestone (left) reignited the 2008 'Crashgate' controversy in a recent interview and it is this which has led to Felipe Massa's actions



Hamilton finished the 2008 Singapore GP third to claim six points (above). Without those points he would have lost the title that year to Massa

would have won the world championship. And the claim that F1 bosses knew what had transpired when there was still time to act has come as a real disappointment for the Brazilian.

"This is very sad, to know the result of this race was supposed to be cancelled and I would have a title," he told *GP Racing's* sister publication *Motorsport.com*. "In the end, I was the one who lost the most with this result. So, we are going after it to understand all this.

"I think if you've been punished for something that wasn't your fault, and it's the product of a robbery, a stolen race, justice has to be served. In fact, the right situation is to cancel the result of that race. It is the only justice that can be done in a case like this."

Ecclestone's words are backed up by those of Mosley and former F1 race director Charlie Whiting, who both spoke about the case in their interviews for a movie about the former FIA president, *Mosley: It's Complicated*, a few years ago. Both said that Whiting had been informed of the deliberate Singapore crash by Piquet Sr at the 2008 title showdown in São Paulo – and that Mosley found out soon after.

However, the official investigation was not opened until mid-2009. As for Massa's troubling question as to why this was not done immediately after Piquet Sr's confession, Whiting and Mosley are no longer with us so cannot respond. Indeed, their comments about the race didn't make the final cut of the 2020 Max Mosley biopic.

Massa's chances of getting the championship outcome reversed seem not even minimal, but practically non-existent. The legal system around Formula 1 is set up in such a way that the highest authority which can change the outcome of a race is the International Court of Appeal. The FIA's own International Sporting Code states, though, that any protest in F1 must be lodged within one hour of the finish, and any right to request a review expires 14 calendar days after a race (if there is new evidence to consider) and four days before the date of that year's FIA prize-giving ceremony.

While Ecclestone's revelations could be accepted as quite significant "new evidence", Massa is over 14 years too late to request a review of the championship results. What shuts down the discussion even before a debate could begin is that a review of the season's results many years later would set a hazardous precedent for the sport. After all, there may be other drivers besides Massa who feel they were robbed of a championship victory...

SHOTS FIRED BY ROKIT

ROKiT was the title sponsor for Williams all through 2019 (above) but is now suing the team and former staff, including Claire Williams and Mike O'Driscoll (below)

02 **It's no secret that Williams** has been going through a rough patch in recent years. But while many teams built uncompetitive cars in the past, the vast majority of them didn't end up being sued for it. In Williams' case, something like that is remarkably taking place.

Former Williams title sponsor ROKiT has launched a $149 million lawsuit against the Grove outfit in a Florida court, seeking compensation for damage to its reputation caused by the team's poor performance in 2019.

That season was among the worst in the team's history. Having signed rookie George Russell and Polish veteran Robert Kubica, the team failed to get its car ready for the start of testing, then scored just one point for the entire year, finishing last in the constructors' championship. Williams then eclipsed that anti-record in 2020 by failing to score a single point. By then, however, ROKiT was no longer sponsoring the team.

Williams announced the termination of the deal at the end of May 2020, during the early stages of the coronavirus pandemic. At the same time it was announced the team was up for sale – and three months later it was bought by investment group Dorilton Capital.

The split with ROKiT was the result of a dispute between team and sponsor after the start of the season was delayed owing to the pandemic. The main point of contention was that ROKiT didn't want to pay the full amount agreed with the team for a shortened season, while Williams wasn't happy with delays in payment.

The dispute over unpaid fees for 2020 then went to the London Court of International Arbitration, where Williams was ultimately successful. ROKiT has now countersued not only the team but also former boss Claire Williams, and former team executives Mike O'Driscoll and Doug Lafferty, claiming that "the arbitrator was not aware of the fraudulent concealment of statements of material facts by defendants that were not discovered until after the arbitration had concluded", as well as that "defendants intentionally and fraudulently concealed the fact that Williams Engineering simply did not have enough money to develop the F1 car". And, ROKiT insists, as a result "of the fraudulent statements made by the defendants, plaintiffs have suffered significant financial loss and damage to their goodwill and business reputation".

Those damages are claimed to be $149,528,550.

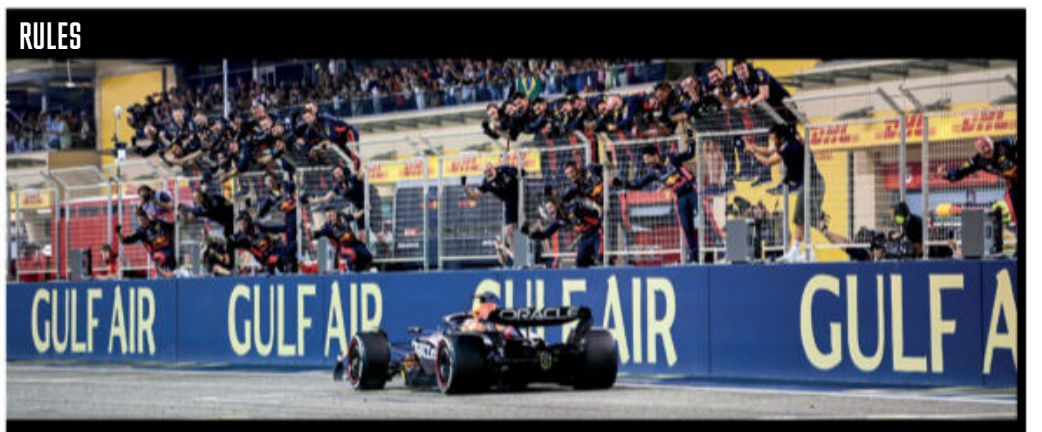
ROKiT alleges Williams misrepresented during negotiations that it was capable of building a competitive car, when in fact the team had neither the technical resources nor the money to do so.

"Before we signed it, we asked exactly those questions in front of my board," said ROKiT boss Jonathan Kendrick. "What is the state of the car? And what is the state of the development? We were told X, Y and Z, and it never, ever was true. That's what we think we can prove, particularly when we go to court. The warrants and the commitments that were given by the board to us could never, ever have been fulfilled. And they just simply were not true. If you remember they turned up at Barcelona [for 2019 testing] late, because they hadn't got the money to do it."

A notable aspect of ROKiT's action is the lawsuit was filed on its behalf by Larry Klayman, an American lawyer, best known for filing lawsuits against the Bill Clinton and Barack Obama US presidential administrations.

NEWS IN BRIEF... NEWS IN BRIEF...NEWS IN BRIEF...

RULES



ICONIC pitwall celebrations, such as this one for Max Verstappen in Bahrain, have been stopped. At the Australian GP F1 race director Neils Wittich specified in his safety notes that it is forbidden to climb on pitwall debris fences at any time

TEAMS

Ex-BAR team boss Craig Pollock has unveiled plans for a new F1 team for 2026 under the FIA's tender process. The operation will be called Formula Equal. with a 50/50 gender workforce split, and is to be based in an 'unspecified Gulf area' country commencing in 2025 and to potentially last for four seasons.

RACES

Start grid boxes have been widened following recent Esteban Ocon and Fernando Alonso penalties in Bahrain and Saudi Arabia.

TYRES

The FIA has invited tyre manufacturers to apply for the F1 supply deal,

DRIVERS

Triple world champion Nelson Piquet Sr has been fined the equivalent of £780,000 in Brazil, for using racist and homophobic language against Mercedes' Lewis Hamilton

PICTURES: GLENN DUNBAR; MARK SUTTON

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EVENTS

F1 INSIDER

OFF-KEY McLAREN CHANGES TECH TEAM

03 **McLaren's poor start** to 2023 has not gone without consequences. After just two races, in both of which the team had failed to score any points, it announced a shake-up of its technical department. James Key, who joined the Woking team from Toro Rosso at the start of 2019 and served as technical director since, has departed. His duties will now be spread between three specialists, including former Ferrari engineer David Sanchez.

James Key has been the loser in McLaren's recent shake-up of its technical department

Sanchez was head of vehicle design at Ferrari. He left Maranello at the beginning of the year and is now preparing to become McLaren's technical director for car concept and performance. However, unless McLaren reaches an agreement with Ferrari, he will not be able to take up his new role until 1 January 2024 as he is still on gardening leave. The plan is for him to work alongside Peter Prodromou, who has been appointed technical director for aerodynamics, and Neil Houldey, who will oversee engineering and design. The trio will report to Andrea Stella, who replaced Andreas Seidl as McLaren's team principal at the end of last year.

These changes come as McLaren's upward progress has stalled. After winning the 2021 Italian GP and finishing fourth in the constructors' championship under Seidl, McLaren didn't live up to expectations following last season's rule change, not only failing to reel in Red Bull, Mercedes and Ferrari, but also losing fourth in the team standings to Alpine.

Reports also suggest the team is bolstering its aero department, having brought in as many as 15 new engineers, including former Aston Martin senior aerodynamicist Mariano Alperin. Insiders say McLaren has also agreed deals with a number of former Ferrari and Red Bull staff who have either already moved to Woking or will do so in the coming months.

THE TRIO WILL REPORT TO ANDREA STELLA, WHO REPLACED ANDREAS SEIDL AS McLAREN'S TEAM PRINCIPAL AT THE END OF LAST YEAR

With the new windtunnel and simulator due to be fully operational within the next few months, McLaren is aiming to fight for podiums again in 2024.

F1 MASTERMIND

Your chosen specialised subject: the world's greatest motorsport

Q1 Which driver currently has the exact same number of points as F1 starts?

Q2 With which team did Esteban Ocon twice achieve his best-ever grid position of third?

Q3 At what GP did Sergio Pérez claim his first F1 podium and who was the race winner?

Q4 Charles Leclerc retired from this year's Australian GP after winning it in 2022. How many times has he retired in a GP the year after winning it?

Q5 How many of Hockenheim's 37 German GPs were won by German drivers: 6, 7 or 8?

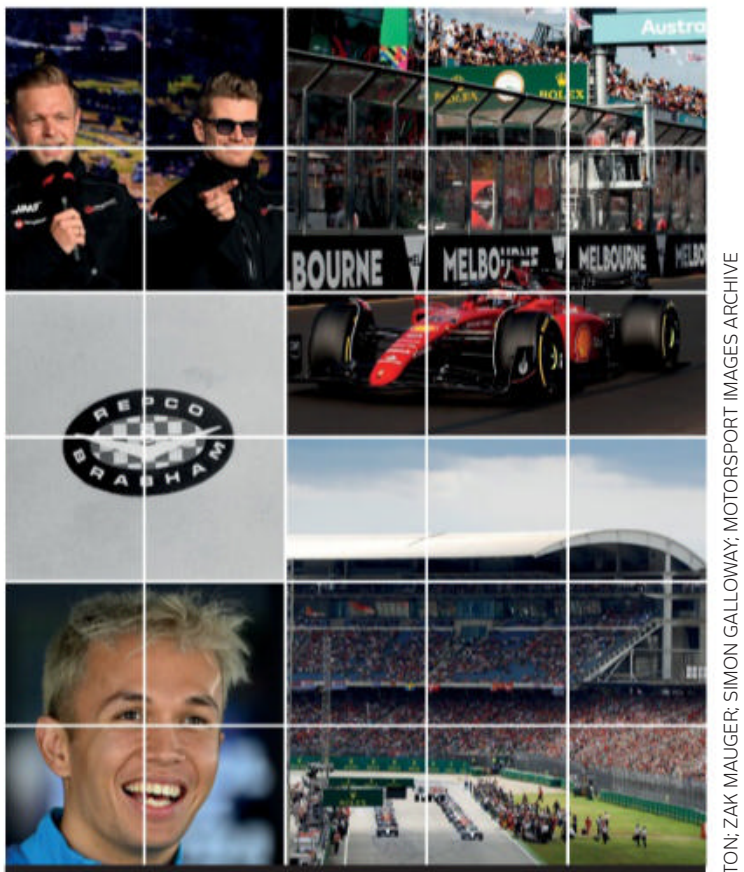
Q6 Who am I? I started 183 GPs from 2000 to 2011 for Prost, Sauber, Jordan, Williams, BMW-Sauber and Renault, claiming one pole position.

Q7 Who won more races for Brabham: Dan Gurney, Denny Hulme or Jacky Ickx?

Q8 True or false: Jenson Button didn't lead a single lap in 2009 after he won round seven, the Turkish GP?

Q9 Aston Martin and Haas both have a driver line-up with a combined age of 65, but which team has the youngest line-up?

Q10 Before Australia, when was the last time Alex Albon started a GP from inside the top 10?



1 Yuki Tsunoda **2** Force India **3** 2012 Malaysian GP, Fernando Alonso **4** Twice (Italy 2019/2020, Bahrain 2022/2023) **5** 8 **6** Nick Heidfeld **7** None of them – they all won twice **8** True **9** McLaren (44 – Norris 23, Piastri 21) **10** 2022 US GP

PICTURES: MARK SUTTON; ZAK MAUGER; SIMON GALLOWAY; MOTORSPORT IMAGES ARCHIVE

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PICTURES motorsport IMAGES

WHAT MAKES ADRIAN NEWEY SO GREAT?

A key pillar of Red Bull's superb performance is aerodynamic design, and that's no surprise given technical boss Adrian Newey has been playing with the effects of airflow on racing cars since the early 1980s. The team's success under revised aero regulations for the current breed of cars is an exemplar of efficient execution.

Adrian's ability to oversee a project which has suffered very little bouncing or porpoising is of no surprise to fellow 1990s F1 designer Chris Murphy. Although they never worked together, there was a strong connection: Chris took over Adrian's role as designer at the Leyton House team and inherited one of Adrian's most intriguing machines. In the middle of 1990 the GG901 was uncompetitive but, as Adrian was shown the door, he had in fact come up with an impressive fix. As Chris attended his first race under the new role, he almost celebrated a maiden win and the aerodynamic skills of his forerunner became very clear.

"There's no doubt Adrian is a prolific aero designer," confirms Murphy. "He did a huge amount of work but back then it was in an unstable windtunnel which produced unpredictable results. I inherited the car; that event at Paul Ricard where we almost got a 1-2 with Ivan Capelli and Mauricio Gugelmin, it was Adrian's car. He had just done a new floor, left as his legacy, and it was very good because the car was hugely unstable before that."

Newey at Williams in 1992 with Patrick Head and Frank Williams. The FW14B was the first of his cars to win a title

Chris believes this era was fundamental to the career of a man who is still a key player today.

"Adrian learned a lot from that period about aero instability from the bottom of the car. He understood the need for stable aero where you have an average value that evens out through the ride height range rather than going for the super peaky thing – which he used to do but had learned wasn't the right thing to do. Team success in F1 depends on whether the designers have been through that understanding and the instability aspect of it. Adrian did because he really pushed the boundaries in the '90s."

The design tools at the engineers' disposal have moved on hugely since then and Chris sees many positives as a result.

"Things you can do now with CAD [computer aided design] are extraordinary; from stressing to design to testing to virtual work in terms of simulation; there's so much you can do that we had to guess."

As a consequence of this increased sophistication, though, design engineering has become more specialised and intense. Opportunities to learn the complete cycle of racing car design through hands-on engineering are elusive. Learning the full picture was something Murphy was able to develop working for Maurer in the early 1980s.

"It wasn't just a racing team, it was a manufacturer of F2 cars," he says "We were seven people at Maurer and we built seven cars a year. I had various jobs simultaneously – van driver, workshop coordinator, draughtsman, car assembler, race mechanic. You learn an enormous amount about every element of the car. Now that's missing."

This was an aspect Newey took on early in his career when he turned down an offer to be an aerodynamicist at Lotus and moved to March to work during weekdays as a draughtsman and at weekends as a race engineer in F2. It was a huge part of developing his all-round vision of what it takes to produce a race winning machine.

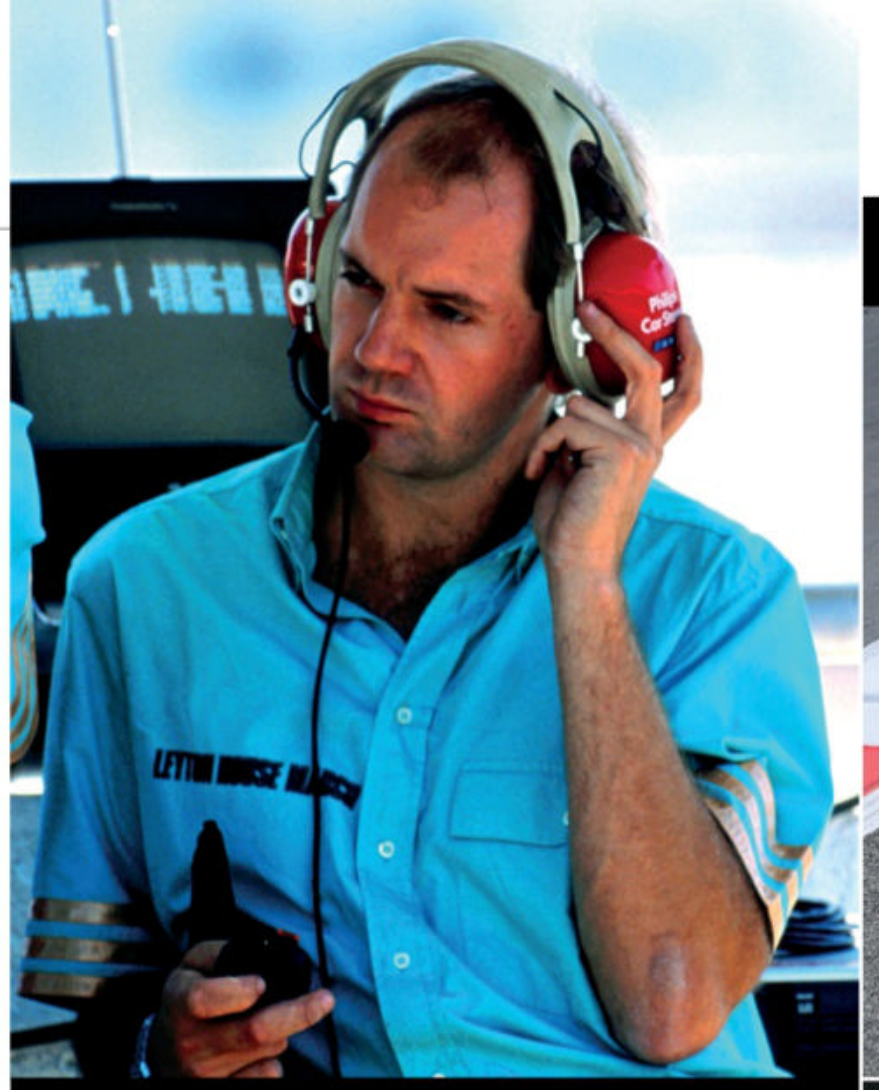
"Because of the way Adrian and I grew up in motorsport, we had to do everything. Most other current designers have come from a specific discipline but, as a result of his learning, Adrian has a holistic view of a car. I'm convinced that is a better way to run the operation, even though a modern F1 team is now getting so big."

There's certainly been a shift in staffing since the '90s. There were 85 people at Lotus when it folded in 1995, with up to 1000 at various teams now. Yet Murphy feels that the key aspect is to focus on engineering, which is still fundamental to Red Bull's methodology.

"Many think team management is what produces results. It isn't, because it's all about the design of the car. You have to know what the numbers are and try to get as close to that as you can. Adrian knows the numbers and anyone ignorant of those numbers needs to find out what they are. That's what makes a car perform, regardless of management structure."

Murphy's respect for Newey hasn't changed: "I have the highest regard for Adrian as an aerodynamicist. He's without doubt the best in F1 but I think his early experience has stood him in very good stead – to everyone else's disadvantage in a way!"

Everyone except maybe Dan Fallows, Aston Martin's technical director, who had the benefit of working with Adrian for over 15 years...

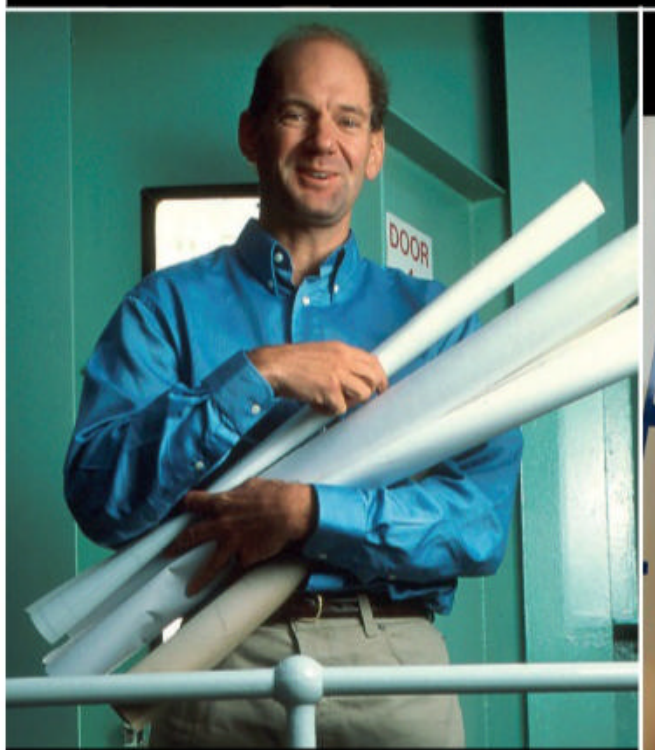


Newey at Leyton House in 1989. The car he left behind, the CG901, almost pulled off a shock 1-2 in the 1990 French GP

The Red Bull RB18 is the latest in a long line of race-winning Formula 1 cars with Newey's influence stamped through it

By 2004 Newey's time at McLaren was coming to an end. He eventually left for Red Bull at the end of the 2005 season

A typical Newey pose, on the grid of the 2011 Indian Grand Prix, surveying the competition with notebook in hand



Newey joined McLaren in 1997. The first cars he designed for the team won titles in '98 and '99

Murphy has huge respect for Newey, in part because of the way he learned his trade in F1

Dan Fallows worked with Newey at Red Bull and is now doing great things at Aston Martin

PICTURES: MARK SUTTON; MANUEL GORIA; ALASTAIR STALEY; MOTORSPORT IMAGES ARCHIVE.. ILLUSTRATION: BENJAMIN WACHENJE.

UNDER THE HOOD

PAT SYMONDS

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RISE OF THE MACHINES: HOW AI CAN BOOST ENJOYMENT

Society has been through many revolutions over the years. We tend to think of the industrial revolution which arose in 18th century England as the birth of the technology-based life we enjoy today, but there have been many others. The development of ever more durable materials, the discovery of electricity and the move from nature-based motive power to science and engineering-based systems were ultimately enablers for the sport we love today.

The rise of cheap computing power has changed many aspects of our everyday life and has a profound effect on the design and operation of race cars and race teams. The time of the intuitive engineer making relatively simple calculations longhand has been replaced by highly trained individuals with enormously capable systems which can analyse any problem to the *nth* degree.

One might argue this has taken away the innovative creativity of great designers such as Colin Chapman or Gordon Murray as the emphasis switches to marginal gains rather than breakthroughs brought about by lateral thinking. Equally, one might argue that creativity in today's motorsport is just altered by regulation. Today performance often comes from acquisition of data and interpretation and exploitation of that data.

Machine learning, a subset of artificial intelligence, can produce adaptable models to predict outcomes but needs data, and lots of it, to do so

This thought might bring us to considering the next revolution already touching our lives in so many areas and, while its use in motorsport is currently just beginning, will change our sport as well. The technology I refer to is machine learning, a specific implementation of artificial intelligence or AI.

Some years ago in this column I wrote a somewhat pessimistic view of where the application of artificial intelligence techniques may take the enjoyment of sport. I argued that if these techniques were infallible then they could only lead to a singularity of solution – and therefore if each designer fed an artificial intelligence system with a set of Formula 1 rules, we would end up with ten identical cars. Equally if each team approached the race guided by similar algorithms then the jeopardy intrinsic to sport would be lost.

This is something to keep an eye on but in the first instance we've been using structural optimisation software for many years now and yet not every suspension component or brake calliper looks the same. Now, optimisation software is slightly different in that it takes an iterative approach to improving a design rather than a deep understanding which could, theoretically, get it right first time.

However there is a branch of AI that can, and indeed is, adding to our enjoyment of sport. This is machine learning or ML. It's worth understanding the difference. Artificial Intelligence is a generic term for software which operates much as the human brain does. It will perform complex tasks and learn from them. Machine learning is a subset of AI that uses algorithms trained on existing historical data to produce adaptable models which can then be used to predict outcomes of a series of events. The key factor is ML needs data to work on and therefore cannot innovate in the same way AI can.

ML is already assisting many of the insights we see on the TV feed. 70 years of data has been stored and used to train models. Yes, the data from early F1 races is sparse and has far less relevance than that of the past few years, but the secret of ML is to feed models with as much data as possible – history has a habit of repeating itself.

The data is now used in many ways. Let's consider one simple example, the cut-off time required to get into Q3. The simplistic approach would probably be to wait until everyone had done one run in Q2, look at the time of the tenth car and declare that as the cut-off time. An ML system would look back at years of data and realise that a driver will generally improve on each run; it ▶

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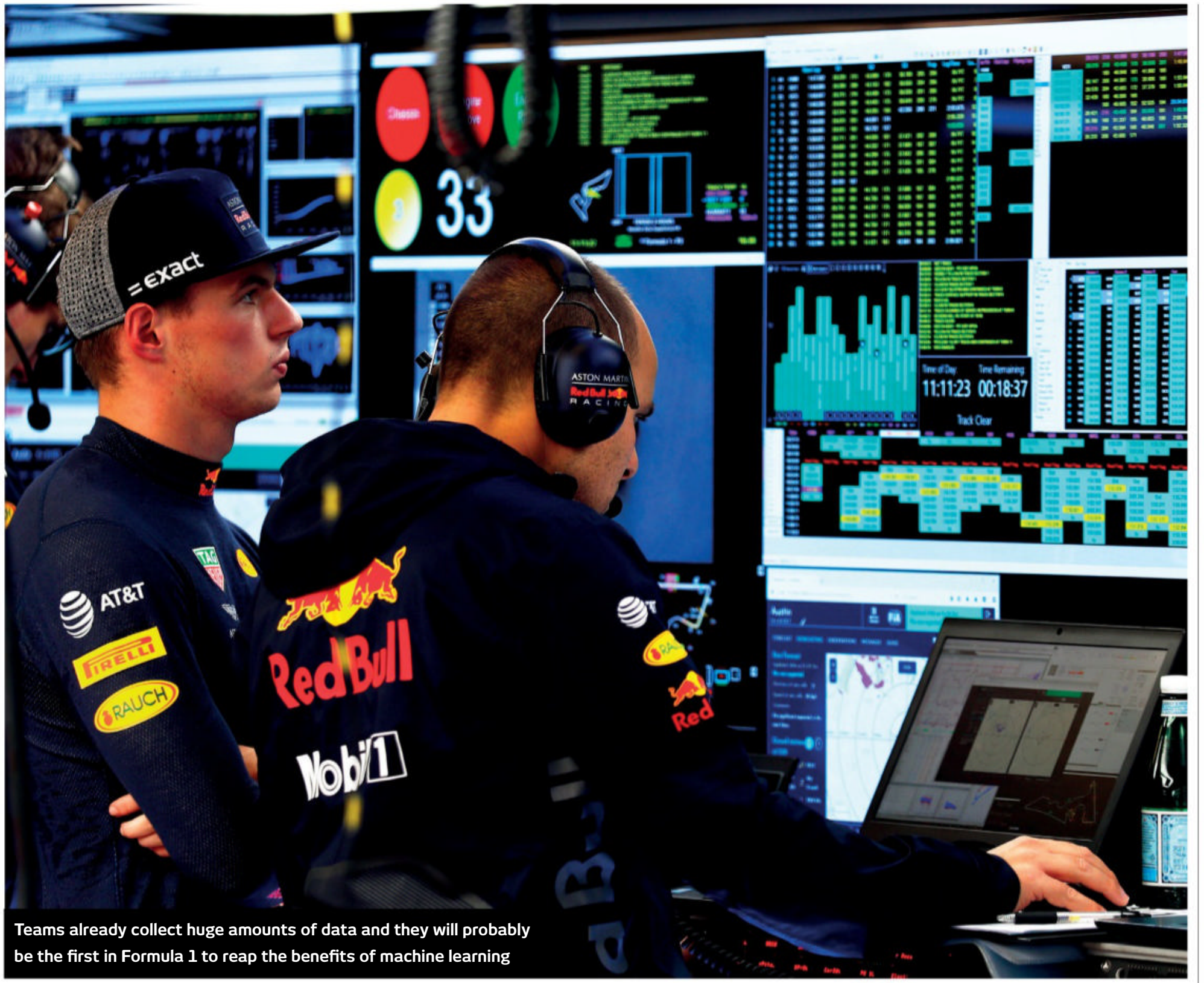

Teams already collect huge amounts of data and they will probably be the first in Formula 1 to reap the benefits of machine learning

will understand, from previous data, how the track temperature may change and the effect that will have on lap time; it will know about different engine modes and maybe, in the future, it may even be able to look at driver biometrics, their heart rate, core temperature and stress levels to see whether the driver is having a 'good day' or a 'bad day', and how this may affect his performance.

Overall, machine learning has the potential to revolutionise all sports by providing insights into performance and probable strategic and tactical outcomes. For many this adds a level of understanding which boosts the enjoyment but it should be treated with caution. Jeopardy is a factor that makes sport what it is. The unexpected result, particularly if it involves a level of 'giant killing', is attractive no matter what the sport. If predictive modelling reaches the level where it has a 99% chance of forecasting the outcome of the race it's likely to turn off a large number of casual fans.

OVERALL, MACHINE LEARNING HAS THE POTENTIAL TO REVOLUTIONISE THE WORLD OF SPORT BUT PARTICULARLY FORMULA 1 SINCE IT'S SO RICH IN DATA

It's likely that the first to really exploit machine learning are the teams, and to some extent this is already happening. They collect vast amounts of data. If human inspection were the only analysis tool available then only a small fraction of this data would be analysed. Automatic analysis tools are developing from being mere reporting devices to being decision makers. This ability to see complex patterns and not just draw conclusions, but to go a step further and make recommendations, will reduce errors in setup and strategy.

Overall, machine learning has the potential to revolutionise the world of sport but particularly Formula 1 since it's so rich in data. This will make F1 faster, safer, and more exciting than ever before. As the technology continues to develop, we can expect to see even more innovations that will change the way we enjoy our favourite sport.

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STRAIGHT TALK

MARK GALLAGHER

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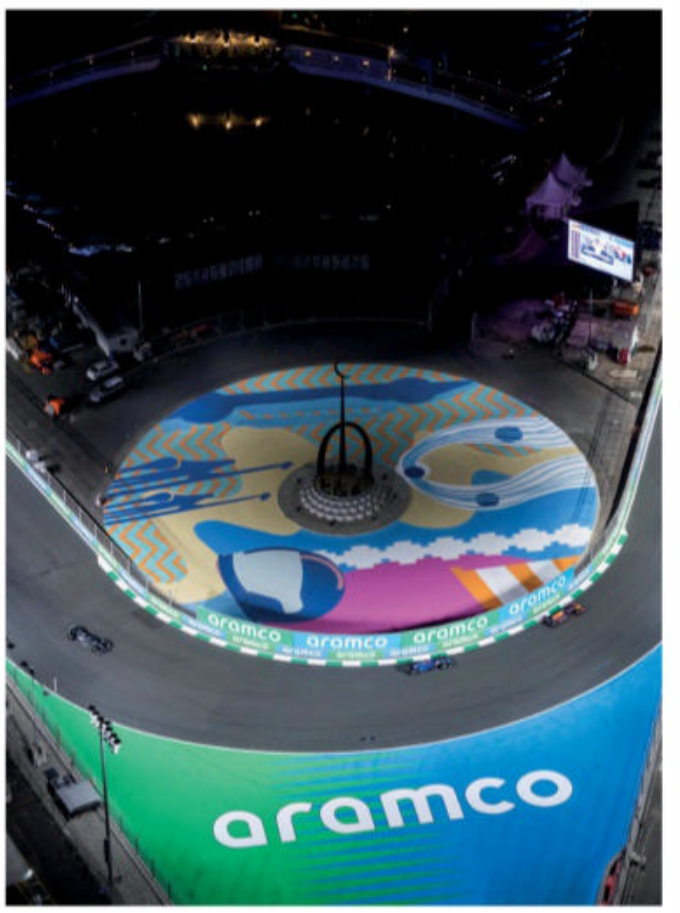
WHY ENERGY COMPANIES MUST ACT QUICKLY

"Climate change is a serious risk to humanity's future and restoring the world to a better carbon balance requires us to reduce the greenhouse gas emissions associated with both oil and gas production and use."

The latest UN Intergovernmental Panel on Climate Change report, published the day after the Saudi Arabian Grand Prix, makes for familiar reading. That is, of course, if you believe data presented by the IPCC, the organisation comprising 195 member states.

If you remain sceptical, and many are, it's worth re-reading the above quote. It comes not from the IPCC, but from His Excellency Yasir bin Othman Al-Rumayyan, chairman of Saudi energy giant Aramco, sponsor of F1 and Aston Martin.

It came in his foreword to Aramco's first event Sustainability Report, a 100-page document outlining how the country sitting astride the world's second largest oil reserves plans to address global warming. It's quite an acknowledgement considering that, just a week before the IPCC report was published, Aramco announced record-breaking profits of £134bn for 2022.



Energy giant Aramco is a substantial sponsor in Formula 1, and the world is waiting to see how such energy companies address climate change

Aramco has made a lot of money in the midst of Russia's war-induced energy crisis, helping to fill the gap caused by Europe switching off Putin's pipelines. Furthermore, Exxon Mobil, Shell, BP and Petronas have all posted record profits which, when combined, match Aramco's figure.

For Red Bull Racing, Ferrari, Alpine and Mercedes these are important sponsors. It underlines the symbiotic relationship which has always existed between producers of fossil fuels, the automotive industry and motor racing.

The latest UN report received widespread headlines, confirming global warming has reached 1.1°C above pre-industrial levels, is continuing to rise at an alarming rate and will hit 1.5°C during the 2030s. Extreme weather events and melting ice caps will simply accelerate. However, in a departure from the traditional doom-mongering for which climate scientists are often criticised, the report makes it clear that, "there are multiple, feasible and effective options to reduce greenhouse gas emissions and adapt to human-caused climate change, and they are available now."

Formula 1, with its commitment to achieving net zero carbon emissions by 2030, recognises that. Its target is based on the rapid adoption of environmentally sustainable technologies and practices. The FIA and the teams appear united in their quest for environmental salvation.

How that squares with a continued reliance on sponsorship from the fossil-fuel sector is a question which is going to be asked with increased regularity.

There is no doubt the advent of synthetic fuels in 2026 will be trumpeted as a major breakthrough but, if the 20 cars racing on sustainable energy are used as billboards by oil companies to greenwash their reputation, it's unlikely to save F1 from its critics. Whether they be campaign groups such as Stop The Oil, society at large or other sponsors eager to distance themselves from the fossil fuel sector.

It is possible one answer will come from the energy companies themselves. Each of them maintains that profits today enable investment in renewable energy and sustainable technology solutions for tomorrow.

Aramco, for example, has allocated a £1.2bn sustainability fund "to encourage investment in technology needed to support…energy transition". Meanwhile BP, having previously announced a 35-40% reduction in emissions by 2030, has admitted it won't meet that target.

Given their front-line role in creating the problem which now confronts us, how these companies address the challenge of climate change is something the world, including a Formula 1, is keen to see. We don't have long to wait.

PICTURE: SAM BLOXHAM. LLUSTRATION: BENJAMIN WACHENJE

THIS MONTH

Natalie Neal

Founder & CEO, NKrush

Planning a grand prix is a huge operation which starts at least eight months in advance. As one of the sport's few female founders and CEO of her own company, NKrush, Natalie Neal explains how her expertise helps promoters in Miami, Mexico and Saudi Arabia maximise their events for teams and drivers, VIPs, sponsors, guests, media and fans

INTERVIEW JAMES ROBERTS

CV

2013-present
Founder & CEO, NKrush

2005-2013
Head of events & promoter services, KHP Consulting

2004-2005
Head of hospitality, ILUKA, London 2012 Olympic bid

2001-2002
Head of hospitality, Benetton/Renault F1 Team

2000-2001
E-Commerce desk assistant, Goldman Sachs

1996-2000
BA French & Spanish, University of Leeds

***GP Racing*:** You have over 20 years of experience working in Formula 1, but where did your journey begin?
Natalie Neal: After studying French and Spanish at university, I spent a year working on the trading floor of an investment bank but soon realised it wasn't for me. To my good fortune I had a friend who worked in Formula 1 and he introduced me to team boss Flavio Briatore. Before I knew it, I was heading up Benetton's hospitality. Formula 1 was very different back then, and that was where it all began for me.

***GPR*:** F1 isn't the only sport you've worked in, though?
NN: After Benetton I spent time living in New York and then Athens. The latter was because I was working with Sebastian Coe and the events team on the bid for the London 2012 Olympics. I then established the events and promoter services department of a company called KHP, which was run by Katja Heim. As a close ally of Bernie Ecclestone, she knew everybody in F1, and provide consultancy for new races, of which there were a lot at that time.

One of the first I became involved in was Bahrain. I was in my early 20s, jumping on a plane to live in an Arabic country that wasn't well known, to learn the culture and help build a motorsport team to promote the event both within the local community and internationally.

***GPR*:** How did you make the jump to set up your own motorsport events and marketing agency?
NN: After nine years at KHP I knew it was time to leave, but I didn't have a grand plan in place. One of the first things I was asked to do was organise a party for Red Bull Racing to celebrate its fourth world championship at the end of 2013. It was a huge event and I realised I needed people to help me so I started putting the NKrush team together. Having struck out on my own from the comfort of an employed role it was humbling to be trusted with such a big gig so early and I remain grateful to this day.

***GPR*:** How would you describe the company today?
NN: We're a core group of like-minded, talented and hard-working individuals who have years of motorsport experience and connections. We offer motorsport promoters – among them Miami, Mexico, Saudi Arabia and Formula E – media services, partnership management and world-class hospitality delivery.

We work with promoters to enhance and maximise their event to ensure that everyone who attends their race, be it the teams, fans, media or VIP guests get the very best experience. Everyone at NKrush has a part to play in setting the tone. It begins with an appreciation that life is brief, and work should be kept in context. We're not short on giggles, and I enjoy the company and friendship of every single person I work with. It's a real privilege

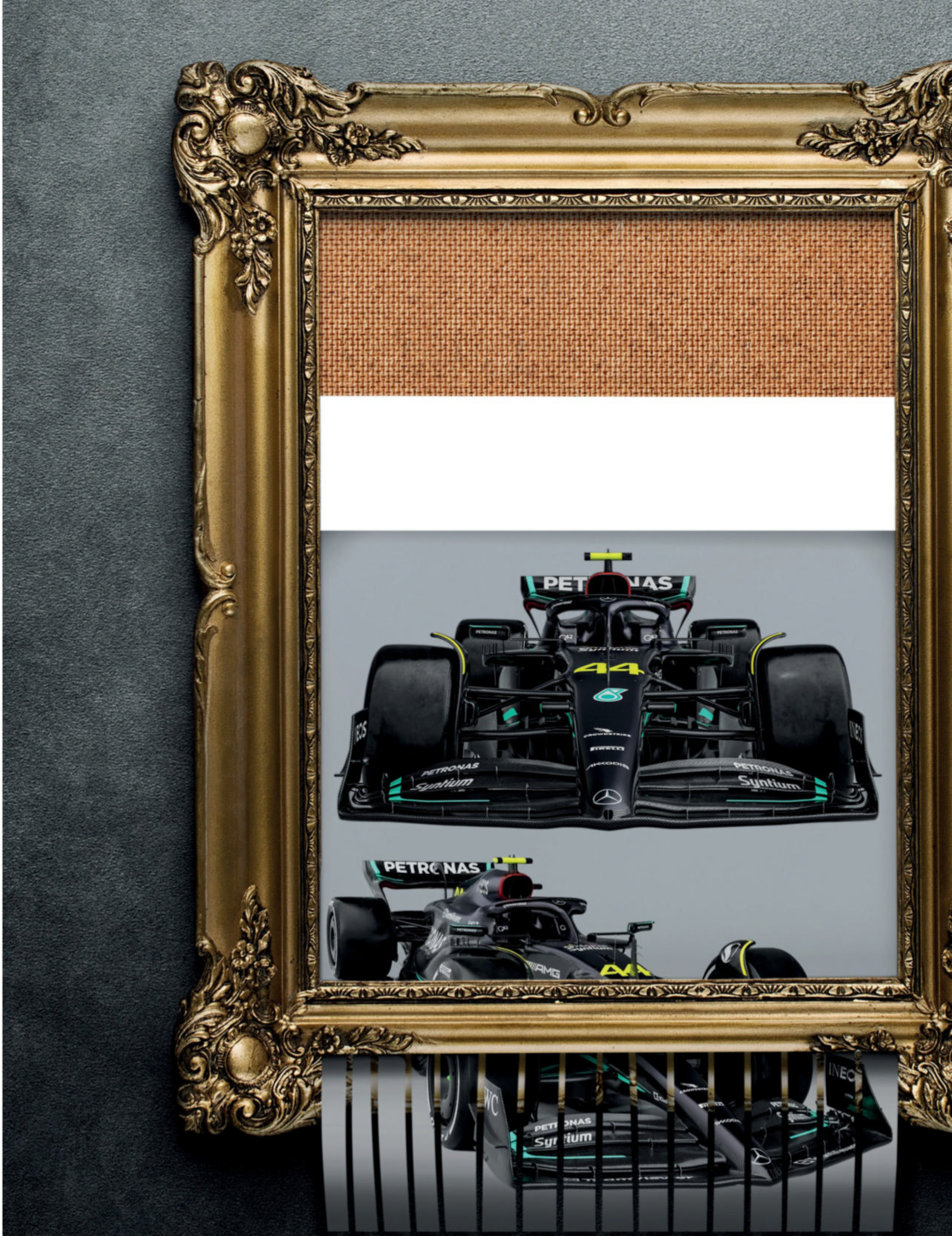
***GPR*:** What is the mark of a good race?
NN: A race CEO, a driver, a fan and F1 themselves will have different ways to define this. One of my favourite benchmarks is how good the event team feels at the end of it. It can't be recorded on a balance sheet, but it's an extremely important barometer. I've known events which have left people deflated and relieved it's over. But the most successful are the ones where there's a mixture of elation and an immense feeling of pride, where the team are ready to go again and raise the bar higher.

When you finish on a positive note it's hugely rewarding. While that's intangible for everyone else, for our team it's invaluable. We don't work for F1 directly, as our aim is to serve the promoter, but if we push and deliver a great event, then we help enhance and create value for the sport of Formula 1 as a whole.

***GPR*:** There are very few female founders of companies in motorsport. What's been your secret?
NN: We're a small, family-run business which at its maximum has fewer than 20 people, but I'm proud to have an extremely low staff turnover. Secret number one is being able to identify and engage great people. Then it's about retaining them and getting the very best from them.

We deliver by being honest, credible and ensuring we can meet the goals we set ourselves. I've been challenged recently by someone saying to me you can't be a successful CEO and a mother, but I completely disagree. It's going well so far, so maybe come and ask me again in another 10 years.

PICTURE: NKRUSH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RIP IT UP AND START AGAIN

Straight after qualifying for the first grand prix of the year, Mercedes boss Toto Wolff made a staggering admission: his team needed a complete change of car concept to return to winning ways. But what does this actually mean? *GP Racing* tech columnist **Pat Symonds** has over 40 years' experience in engineering Formula 1 cars, including several championship winners, and well knows what it's like to realise when an idea isn't working...

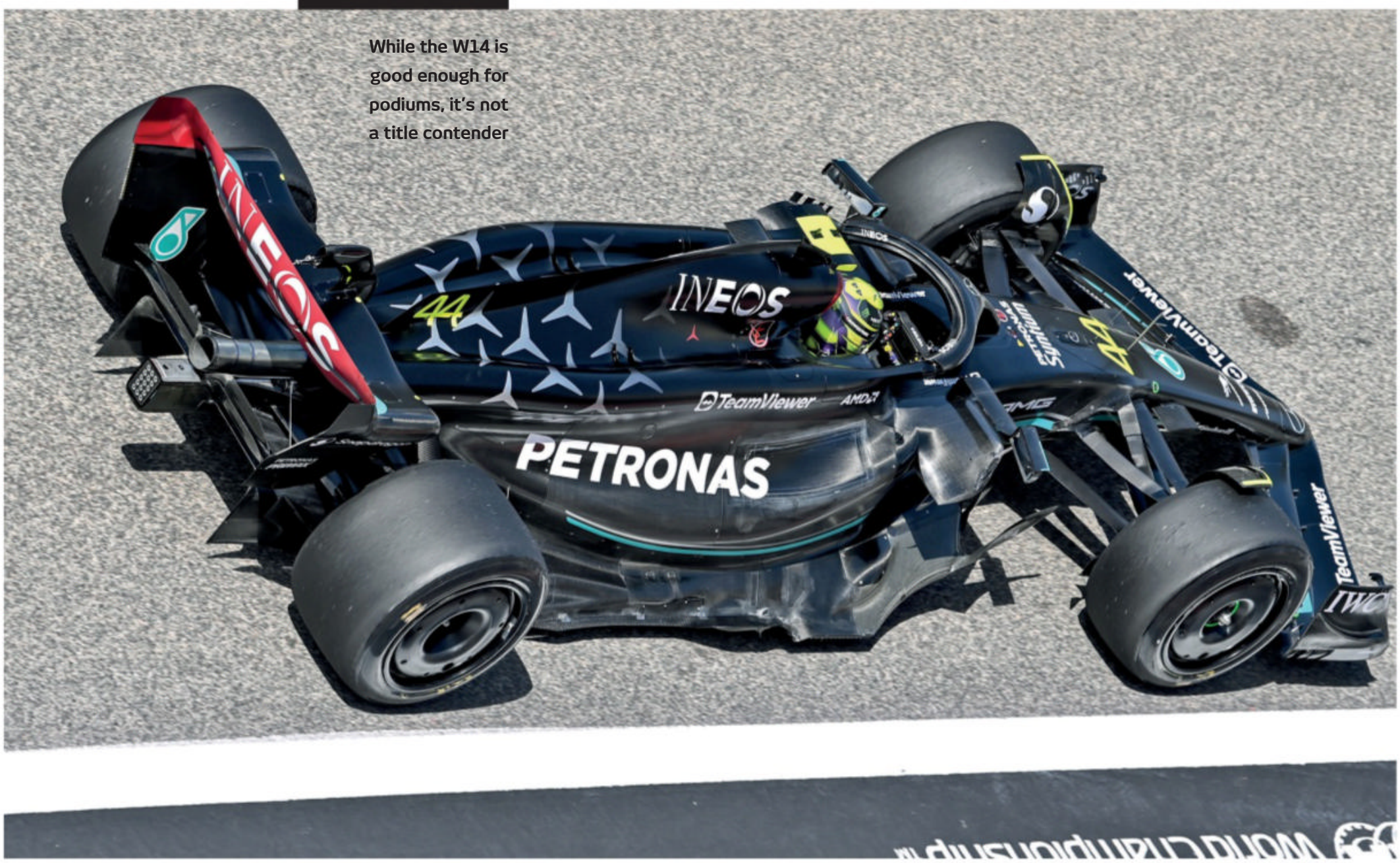
PICTURES motorsport IMAGES

In my time as chief technical officer at Williams I had the chance to engage with Toto Wolff on a regular professional basis. I really respected his management ability: he knew when to use the carrot and when to use the stick.

Symonds (left, with Willliams CEO Mike O'Driscoll) and Wolff (right) back in 2015

At this time, while still a shareholder at Williams, he had relinquished any close role to avoid conflicts of interest with his new role at Mercedes. My relationship with him, therefore, was as a customer for the power unit. I perhaps saw more of the carrot than the stick, although there were times when the string that the carrot dangled from was visibly shortened when our team challenged his. My colleagues at Williams, however, were only too aware of his ability to wield the stick since Williams had been singularly unsuccessful in the years up to 2014, and Toto was forthright in his criticism of certain aspects of the operation.

Toto has been very vocal in his feelings about the Mercedes performance of 2022 and early 2023. He was always the first to praise the team



While the W14 is good enough for podiums, it's not a title contender

The W13 did eventually win a race in 2022, but Wolff says the car left no runway for further gains

during its immensely successful years from 2014 to 2021 and, therefore, had every right to question the direction the technical team took with the design for the new-era car for 2022. Being the hands-on manager he is, one can imagine he's been involved in some difficult and probably heated discussion in Brackley over the past year or so. He will undoubtably have been wanting to hear the outcomes of post-race technical analyses and will also have been briefed on the content of regular design reviews. He will have been demanding explanations as to why the team has lost the competitive upper hand and what actions are in place to rectify the situation.

Unfortunately, even with the sophisticated data tools available to the teams today, the results of competitor analysis aren't always clear and, even when they are, don't immediately lead to solutions to reverse an uncompetitive situation. The data can confirm a car is slow in a medium-speed corner or is lacking top speed, for example, but the solutions need to be determined through an optimisation process by the engineers. As an example, lack of top speed can be conceived as a car having too much drag but the route to better performance isn't simply to reduce the drag, it's to increase the aerodynamic efficiency – a much more complex task.

Drag reduction is easy – a smaller rear wing will achieve this, but it will also lead to a drop in downforce and a reduction in cornering speed. Performance optimisation is a multi-dimensional problem and not an easy one to understand, particularly if the data you have is sparse.

IT'S VERY EASY TO PURSUE A DIRECTION BECAUSE YOU BECOME HEAVILY INVESTED IN ITS SUCCESS. YOU MAY FEEL RESPONSIBLE FOR A PARTICULAR DIRECTION THAT HAS BEEN TAKEN – OR YOU MIGHT FIRMLY BELIEVE THAT, IN SPITE OF REPEATED FAILURES, SUCCESS WILL APPEAR WITH THE NEXT DESIGN ITERATION

CONCEPT VS EXECUTION

So for Toto to say the concept of the W14 is wrong and that the W13 left no development runway from which to launch improvements is a significant statement. The problem is that for a concept to be wrong, one must first decide what the concept actually is. Is it the concept itself that's wrong or is it the path taken to implement that concept? How do you examine and quantify the multiple paths that may exist? One of these may lead to the breakthrough that's needed, many of them may be just blind alleys.

It's very easy to pursue a direction because you become heavily invested in its success. You may feel responsible for a particular direction that has been taken – or you might firmly believe that, in spite of repeated failures, success will appear with the next design iteration. I worked with one very talented engineer at Renault whose ideas led to a breakthrough in our performance and yet who, at the same time, spent two years trying to make another innovative design work before he was told to throw it in the bin. It takes a strong mind to stick with something through adversity, but it probably takes a stronger mind to abandon a project which has become the focus of your life but isn't yielding positive results.

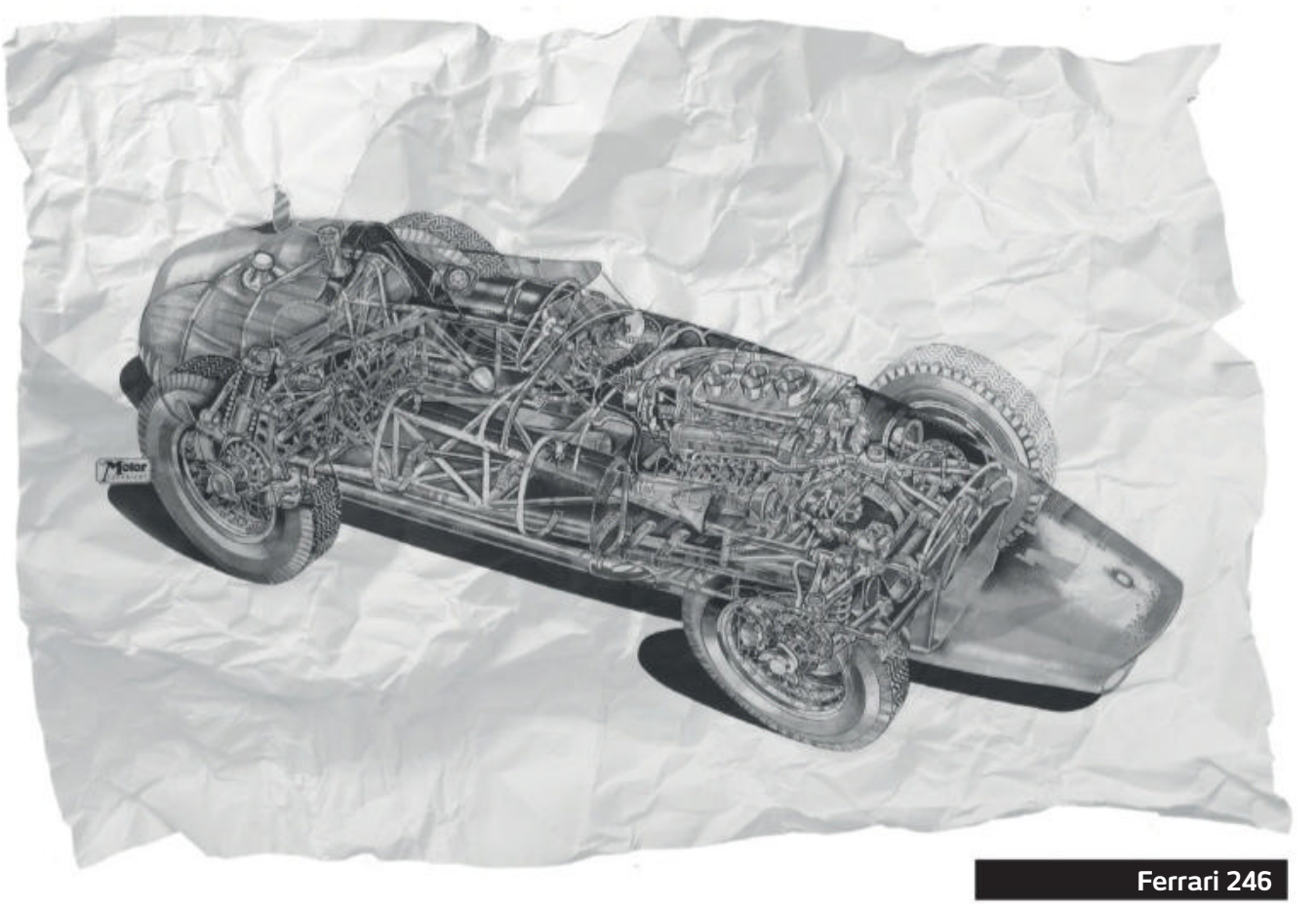
When the 2022 regulations were released and teams started work to interpret those rules to best gain performance, a few things became obvious. It's been the case for many years that part of the secret of aerodynamic performance has been to get clean, high-energy air to the rear corners of the car. This became more important in 2022 as the front wheel wakes were no longer pushed sideways but instead were contained closer to the car itself.

The need to get clean air to the rear was ever more important since this air serves three purposes. Firstly it acts on the rear brake duct winglets, producing downforce directly onto the wheel without going through the suspension; secondly, as it passes over the diffuser top surface it will entrain air from underneath, thereby increasing the underbody flow; and thirdly, and perhaps most importantly, it blasts the rear-wheel wake away from the car centre line. Any encroachment of the rear-wheel wake into the diffuser area is hugely detrimental to total downforce since it destroys the all-important flow of air under the car.

Equally important to the capability to produce downforce is the ability to use it. The current cars, in total contrast to their flat-bottomed predecessors, reward a low rear ride height.

To maintain a low ride height under high and low load conditions one needs stiff suspension. One also needs stable aerodynamics that are predictable and give the driver confidence the car isn't going to misbehave in any area of its operating envelope. So when a car isn't performing it may be that the concept is correct but the execution is flawed. Maybe the sweet spot of ride height is simply too close to the ground to be useable; maybe the bodywork stiffness is inadequate, leading to airflow detachment from the surface and instability.

So does the problem lie within the realms of what may be termed concept, or is it firmly ensconced in the execution?



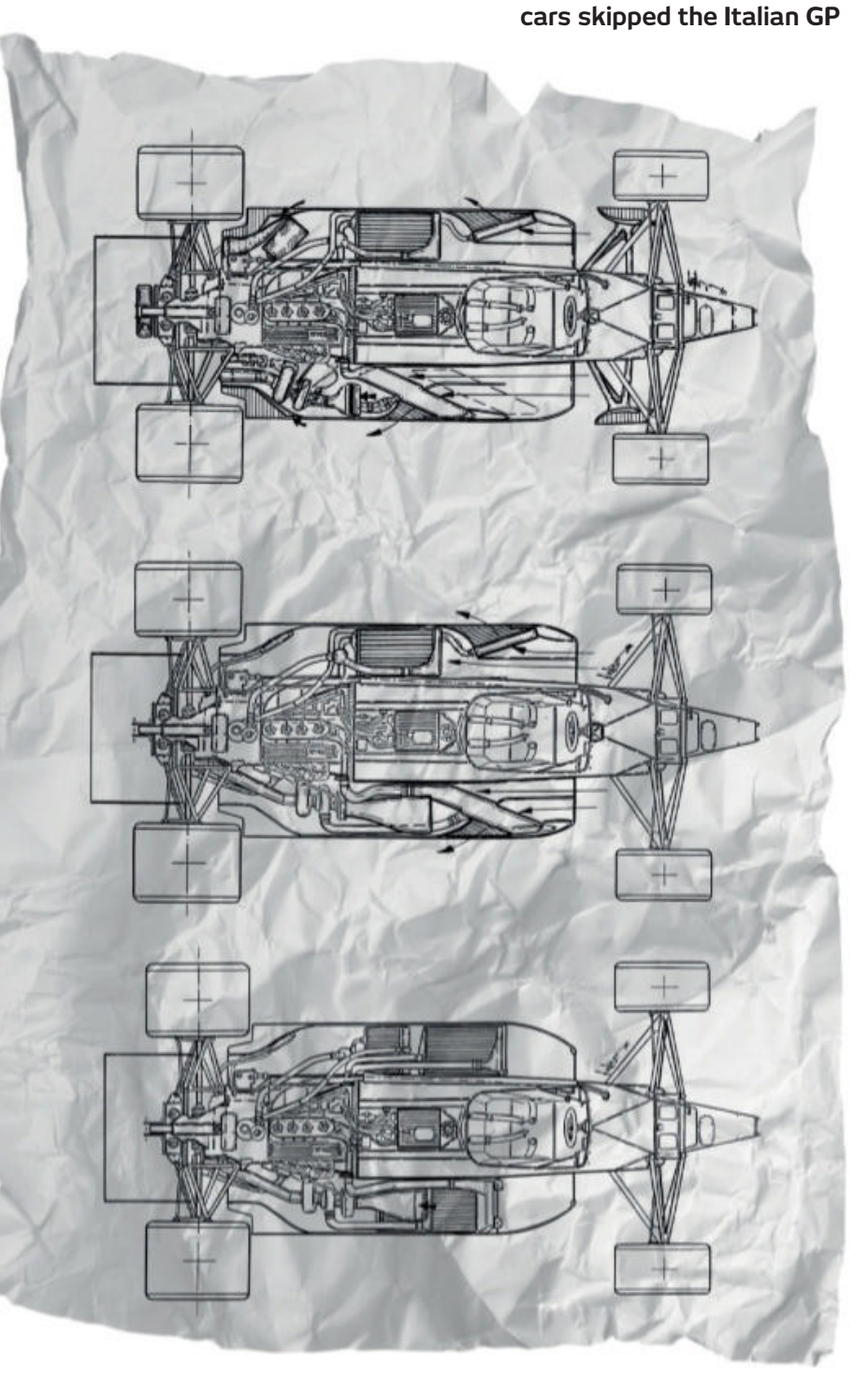
Ferrari 246

The obsolete 246 was a race winner in 1960 but only because teams with better cars skipped the Italian GP

HISTORY'S NEAR MISSES

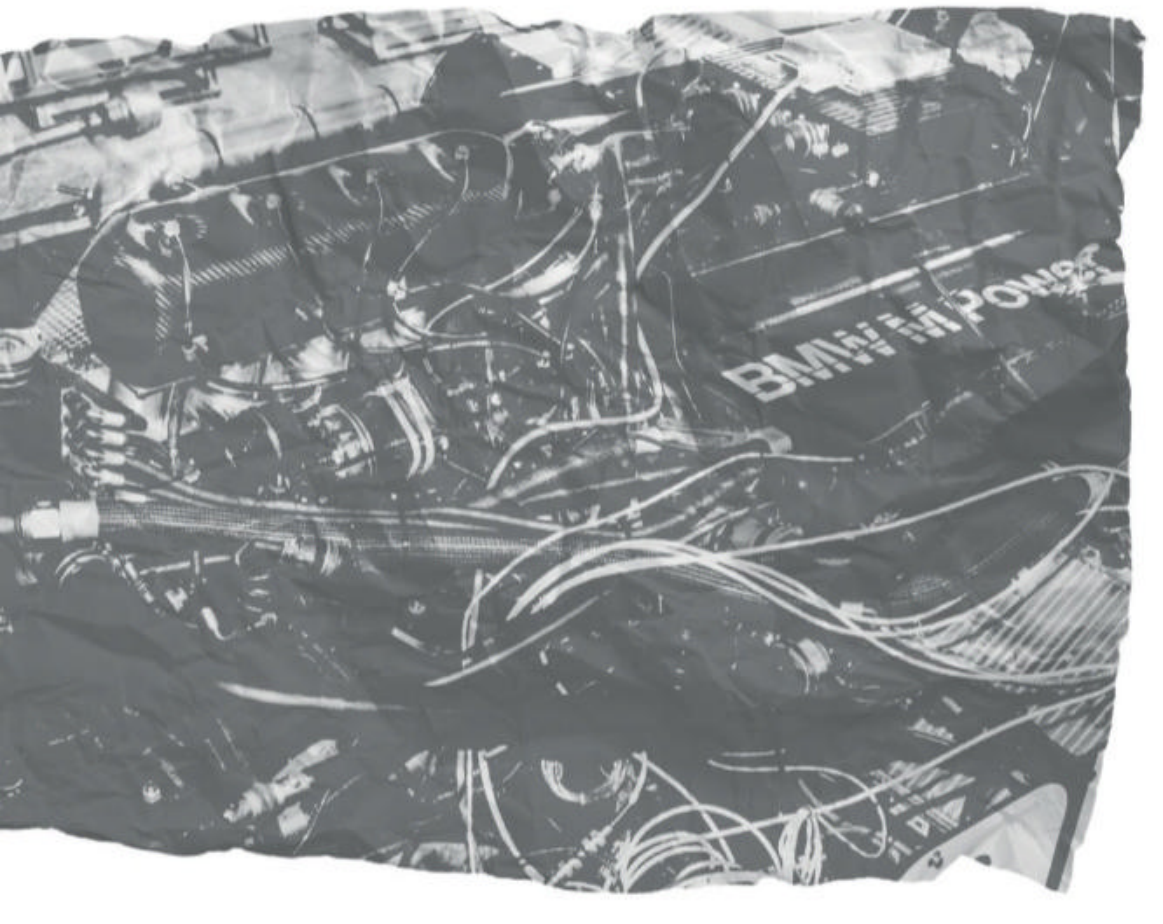
Before we get into the detail of the Mercedes W13/W14 cars, let's look back at some history to examine the provenance of some possibly flawed concepts. When the Ferrari 246 won the Italian Grand Prix in 1960, it continued a run that one would have to consider successful – but this was to be the last time a front-engined car won a grand prix. The debut of the Cooper T43 three years earlier meant that the Ferrari, although still competitive, was a flawed concept. Ferrari simply didn't look at what the competition were doing and evaluate their designs with an open mind.

In the late 1960s there was a blind avenue of four-wheel drive in Formula 1 which many followed, including Cosworth. It's an interesting example of a concept which may have been



Brabham BT55

The BMW four-cyclinder engine (below) was canted over at an angle for the BT55 (right) but this never worked



McLaren MP4-18

Even the best sometimes get it wrong. The Adrian Newey-designed McLaren MP4-18 was flawed and never actually raced

correct but an execution that failed for reasons not obvious at first sight. I recently spoke to Cosworth co-founder Mike Costin, now 93 years old but as bright as ever, to ask him if he felt the concept was wrong. He felt it wasn't.

"Traction had always been a problem, even with only 400bhp, since we had no aerodynamic downforce," he told me. "The concept was to run 55% of the drive torque to the rear and 45% to the front and this would have worked."

Now Mike wasn't only a brilliant engineer, he was also no mean driver and it was he who first tested the car. "After five laps driving at Silverstone I was too exhausted to turn the steering – it was so heavy"

The Formula 1 cars of that era had no hydraulics and so power steering wasn't really something that could easily be added. The only way to lighten the steering was to move the torque split backwards.

"When we got to 70% rear and 30% front the car was drivable but the advantage had gone," Mike concludes.

So the concept may have been correct but the necessary enablers for success were not there.

As we progress to the era of ground effects, Jody Scheckter won the 1979 drivers' championship in the ungainly Ferrari 312 T4. This was powered by a flat-12 engine, the architecture of which was completely unsuited to the requirements of a ground-effect car: its width encroached on the area where the underwings of other cars were placed. Nevertheless it won the championship and is a rare example of a flawed concept that was ultimately successful.

In my own experience, the Renault RS22 engine was similarly flawed in concept. The ultra-wide-angle V10 engine was conceived to lower the centre of gravity of the engine but the lateral spacing of the inlet trumpets meant that cylinders were unable to cross-feed, something that hadn't been understood before the engine was built. The result was an extreme lack of torque arising from a conceptual decision which could not be changed without starting again.

GREAT IDEAS, BAD CONSEQUENCES

Sometimes the concept is good on paper but anticipated problems prove harder to cure than expected. Such a car was the Brabham BT55. Brabham had used the BMW four-cylinder engine for a while and felt a worthwhile improvement to the car could be made by canting the engine over at an angle rather than running it upright. Oil scavenge problems were anticipated but never really resolved despite multiple re-designs of the sump and scavenge pumps – another brave concept to bite the dust.

Even the best have their occasional off-years. Adrian Newey, on my opinion the best technical leader of recent years, has overseen a car so flawed it never raced: the McLaren MP4-18. This car from 2003 incorporated many ideas and was perhaps a step too far in concept. In his book *How To Build A Car*, Adrian states that the problem was "related to the shape of the chassis

Ferrari, Red Bull and Williams all favoured directing airflow over the top of the sidepods at the start of 2022, while Mercedes went for its extreme no-sidepod approach

and the front of the sidepod overloading the vortex that forms off a delta wing just in front of the sidepod, causing the vortex to be unstable and burst in certain conditions. The problem could be alleviated by trimming the wing, but this lost downforce".

With all due respect to Adrian I suspect this was one of a myriad of problems. The car featured a blown diffuser, something we were struggling with at Renault at the time. The only solution to stabilising this was drastic engine remapping – something Mercedes wasn't doing, I believe. Mark Preston was the chief structural engineer in charge of the chassis. I asked him about the car and he told me: "Adrian wanted to use unidirectional carbon everywhere. In some places this was good but in others difficult. The front wing main plane would alter its angle of attack by 5 degrees at maximum speed due to a lack of stiffness and this made the car hard to balance."

The problems weren't confined to structure and aerodynamics. Mark went on: "The desire to lower the engine in the chassis and the extremely tight bodywork both conspired to make something that was theoretically good but practically bad."

It was a car where the concept was perhaps too ambitious and maybe ahead of its time. Size-zero bodywork and low-mounted drivetrains are, however, now the norm.

SIDEPODS MAY NOT BE THE WHOLE PROBLEM

Returning to the current Mercedes, if the concept of all cars is to get high energy air to the rear corners, it's more in the execution that one might see differences – and where the architecture of the car may either enhance its performance or be detrimental. In early 2022 we saw two approaches to dealing with the sidepod aerodynamics.

Some chose to flow the air over the top of the sidepods and then encourage the air to dive downward toward the diffuser. The most extreme example of this was the Williams, which relied on a strong Coanda effect to keep air attached to the extreme curvature of the top of the pods. This was soon abandoned for a more gentle shape. The other approach was more akin to the pre-2022 cars with a deep undercut beneath the radiators to allow a low-positioned flow of air to the rear corner.

History shows the former to be more successful (Red Bull, Ferrari and Aston Martin) but this isn't to say the latter approach is incorrect. Mercedes has undoubtably taken that concept to the extreme by means of an extremely clever cooling layout. While Red Bull and others have maintained an air-to-air intercooler to cool the engine air coming from the compressor,

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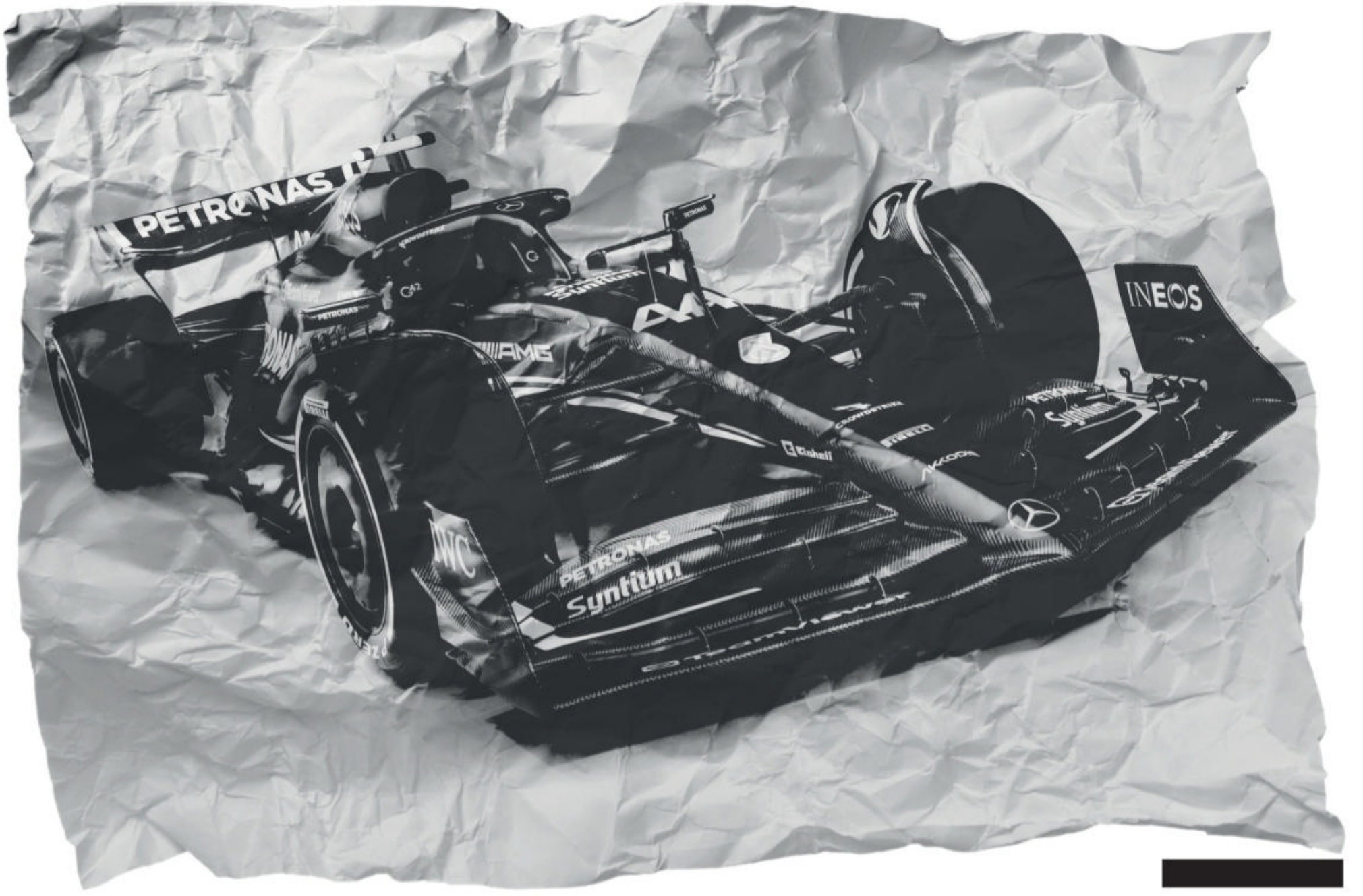

A complete redesign of the W14 will be constrained by the budget cap, while following another team's concept is not a guaranteed route to success

Mercedes, like Ferrari, has used a water-to-air intercooler. In the case of Mercedes this has led to an extremely tight design of the rear of the car, which is enabled by the most complex fuel-cell area and rear of chassis of any car I've ever seen.

Lewis Hamilton says that he isn't at one with the car – is there a clue in this? A driver needs confidence and this confidence can be destroyed by an unstable car. In turn this can be caused by aerodynamic instability or a feeling of movement. Maybe the complex chassis shape doesn't provide the stiffness required. Only Mercedes knows the answer to that.

THE LIMITS OF COPYING

Perhaps more importantly, what can Mercedes do about it? The budget cap assumes a regular development programme but limits a total redesign – if indeed that's what is needed. Copying someone else's concept is always difficult. One designs to a maximum of performance but one never knows if this is a local maximum. Moving away from where development is leading you always starts with a negative result until the nuances are understood and changes get positive.

In my time at Williams, the first car I was involved with was the FW36 of 2014. This was extremely successful, largely because we pitched many of our design objectives in just the right area for the then-new turbo-hybrid era. After some bad luck in the early season we regularly took the fight to the dominant Mercedes team, claiming the front row in Austria, leading before the rain in Silverstone and chasing Lewis hard to a second and third place in Abu Dhabi.

The car had been generally reliable and carried around 17kg of ballast. For the 2015 car, I wanted to turn that ballast into performance and there was one obvious place to do it. At the time every other car had their lower rear wishbone aligned with the driveshaft, seeking an aerodynamic benefit. The FW36 had the wishbone positioned lower which meant loads in the wishbone were reduced relative to the more common design. The lower loads meant a lighter structure and so this was where we turned our attention. Lifting the wishbone in line with the driveshaft led to a significant weight increase and, initially, a drop in aerodynamic performance. We had optimised the car around a local maximum of performance and when we moved away from that, other surfaces needed to move in harmony with the new airflow.

The initial drop in performance was high and it took some time to re-optimise. Although ultimately we got the performance we were seeking, it was a classic example of how one cannot just copy the detail of another car without fully understanding and working on the concept that surrounds it.

If Mercedes' problem is aerodynamic it needs to rapidly evaluate the concept of the successful cars and I'm sure it's doing that. If the problem is more systemic, such as a structural problem, the road to success is much longer.

I think what makes the answer to the problem more difficult is that towards the end of 2022 it appeared Mercedes was on top of the car and competitiveness was returning. Was the end of last season, and particularly the result in Brazil, a false dawn? Did the win in Interlagos persuade the leaders there was nothing intrinsically wrong with the car – and, therefore, was this triumph actually the foundation of further grief?

2023 results suggest this was the case and, if the budget cap boat has sailed, this will be a long season for Mercedes.

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THE CLONE WARS

At the start of the season, senior Red Bull figures openly claimed the new Aston Martin was a copy of the 2022 championship-winning RB18. As we reveal here, while such accusations are empty bluster, the truth is that there *is* a profound Red Bull influence – just not in the way you might expect...

WORDS MATT KEW
PICTURES motorsport IMAGES

In the early races of 2023 Aston Martin, through Fernando Alonso, has been Red Bull's closest challenger

LET THE RECORD SHOW that when Aston Martin whipped the covers off its 2023 challenger way back on 13 February, claims the team might have simply copied Red Bull were far thinner on the ground. It was an extremely convincing testing display that ignited the gamesmanship as rivals began to insinuate last year's title-winning RB18 had been gone over with tracing paper. The furore only intensified when Fernando Alonso humbled Mercedes and Ferrari to kick off the campaign with consecutive podiums.

In the immediate aftermath of Alonso chalking third behind runaway victor Max Verstappen and Sergio Pérez in the Bahrain opener, Pérez twice joked Red Bull had finished 1-2-3. Then team advisor Helmut Marko pointedly asked: "Can you copy in such detail without having documentation of our car?" Perhaps persuaded

RED BULL

MERCEDES

FERRARI

ASTON MARTIN

Aston has not slavishy followed the Red Bull route with its sidepods. It has chosen its own way to channel air to the rear diffuser

by legal counsel, the Austrian soon backtracked from directly accusing Aston technical director Dan Fallows of leaving his previous Red Bull post in the summer of 2021 with a USB stick loaded with data. Apparently, Marko was "just joking".

Aside from avoiding a courtroom, might Red Bull's most prolific quote factory have been right to tone it down chiefly because the AMR23 doesn't actually mimic last season's standout creation all that closely? Put the pair side-by-side and the Aston has a far tighter engine cover and more curved front and rear wings. The longer and larger nose for 2023 is more reminiscent of Haas. As for the sidepods, if anything, Lawrence Stroll's merry band of designers have been more reliant on Mercedes' size-zero package than Red Bull to sculpt the top surfaces.

Courtesy of running a customer Merc powertrain, Aston has been able to look to its donor for inspiration on the layout of the engine cooling package. Whereas Mercedes uses a shrink-wrapped design to maximise the floor surface area to best exploit ground effects, Aston has used the tight arrangement to instead beat Adrian Newey at his own downwash game by filling the free space with ramps to create its more aggressive so-called 'slidepods'.

The result is the sizeable cut-outs are more akin to the Ferrari bathtub model. Fallows and former Mercedes chief aerodynamicist Eric Blandin have worked to channel as much air as possible to the rear diffuser. Even with the front inlet featuring the trademark Red Bull underbite, there's as much Maranello as there is Milton Keynes on show around the side of the AMR23. What's more, McLaren and Alpine already dabbled with a similar design in 2022.

LAWRENCE STROLL'S MERRY BAND OF DESIGNERS HAVE BEEN MORE RELIANT ON MERCEDES' SIZE-ZERO PACKAGE THAN RED BULL TO SCULPT THE TOP SURFACES

Rather than Aston having copied Red Bull's homework, this melting pot of ideas is the natural outcome of Fallows and Blandin coming together, says team performance director Tom McCullough. He tells *GP Racing*: "One had been at Red Bull and one at Mercedes. They were very much like, we want to do this in what Dan refers to as the Aston Martin way, which is to listen to everything. Let's get the input from two different ways of developing a car and then look at where we need to improve

COPYRIGHT CONFUSION: THE SHADOWY ARROWS

Shadow founder Don Nichols' fanciful talk of major investment and signing James Hunt for 1978 was the final straw for top staffers Jackie Oliver, Alan Rees and Tony Southgate. They quit, helped create Arrows and, just 53 days later, the team's first car was ready for testing.

Given the rapid turnaround, unsurprisingly the new FA1 bore an uncanny resemblance to the Shadow DN9 which Southgate had drawn shortly before departing. The suspension and hub assemblies were particularly familiar. An incensed Nichols sued for copyright in a litigation battle which dragged on until the German GP, round 11 of 16.

Shadow ultimately won the case to claim £1000 for the breach and £25,000 for loss of earnings. The cars were also handed over. Arrows, meanwhile, racked up £250,000 in legal costs. But Southgate had been afforded time to design a different-enough replacement, the A1.

INSIDE KNOWLEDGE: THE BLUE FERRARI

Ferrari moved heaven and earth to sign John Barnard as technical director in 1987, even permitting him to be based near Guildford. That left no room for incumbent designer Gustav Brunner, who duly left and reunited with ex-ATS owner Hans-Gunther Schmid – returning to F1 to promote Rial, the alloy wheel manufacturer he'd acquired.

The fledgling team's first effort, the ARC1, borrowed heavily from Maranello to be dubbed 'the Blue Ferrari' courtesy of its similar monocoque. At least the front suspension and gearbox casting were new. Plus, the Rial's engine cover and sidepods were remodelled for the switch from a turbo V6 to a Cosworth V8. Eleven DNFs for sole driver Andrea de Cesaris meant Ferrari wasn't too worried about the overlap before Brunner swiftly departed, having fallen out with Schmid.

and what is the best way of doing that. That's the reality, which is why the [Aston and Red Bull] do look quite different really, if you look at a lot of the areas of the cars."

The public fixation has been with sidepods because they are where design differentiation is most apparent. This had led to them being wrongly conflated with directly determining who is hot and who is not. Instead, it's the underfloor manipulation of the air that does the heavy lifting in this ground-effects era of F1. Engineers reckon what you can see makes up 40% of the cars' performance, while 60% is governed by what's going on underneath. Hence mechanics go to great lengths to cover the floor vanes from prying photographers when accompanying broken-down cars which must be craned onto a flatbed.

Dan Fallows (far left and Eric Blandin (middle) are ex-Red Bull and Mercedes personnel and team performance director Tom McCullough (left) says the Aston Martin AMR23 is the natural result of the pair working together

The idea that the Aston Martin and Red Bull differ more significantly than first realised is seemingly supported by how the two cars go about generating their quick lap times. GPS data reveals the RB19 to be fantastically customisable: Red Bull is able to top the speed traps at one circuit then pull clear through downforce-dependent corners next time out. The AMR23 is much more consistent. It's draggy, somewhat asthmatic north of 180mph. But it consistently sets the standard under braking and through the slowest corners where mechanical grip proves decisive.

But, even with plenty of variances apparent, there's no wondering why Aston has faced allegations of plagiarism. The Silverstone squad set the precedent early last season by abandoning its initial, lacklustre concept to debut an effective B-spec machine as early as round six in Barcelona. This was the first case of any team making such a major departure from what it had previously presented and converging around the optimum philosophy, which was the RB18. Thanks to some familiar-looking downwash sidepods, so came the 'green Red Bull' comparisons which have hung around.

Aston says it realised the need to change tack independently and early in 2022. To make timelines marry, perhaps previous design boss Andrew Green ripped up his own work and coincidentally settled upon a very similar design to Red Bull before either car was unveiled. Or the team recognised the potential of the RB18 immediately in testing and used the three months prior to the Spanish GP to take heavy inspiration. Or, finally, maybe the sanctity of gardening leave is up for questioning.

It was announced in June 2021 that Fallows would be leaving Red Bull. But he wasn't able to start his Aston tenure until 2 April 2022, just seven weeks before the Spanish round. Such a tight window would've made it impossible for him to fully lead the turnaround. But as he was phased out of conversations in Milton Keynes, it's unlikely he was sat twiddling his thumbs and forgetting everything he knew. Certainly, when his Red Bull superior Newey departed Williams to join McLaren for 1997, he too was meant to spend time planting daffodils. But that didn't stop him from using the gap between tenures to sketch a design for the forthcoming '98 rules and meet future colleagues for dinner.

McCullough's take on the situation is: "Last year, we started a certain way. It wasn't the

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right way. We accepted that and we changed that. [Fallows and Blandin] arrived during that process and then agreed and then took hold of that and sort of ran with it. We were onto a path before they turned up. But they were able to bring another level of knowledge and experience from two of the best teams."

Aston was more competitive following the Spanish GP update but still reached just seventh in the final standings. Only now have Fallows and Blandin turned Aston into 2023's success story. How they've gone about that transformation will have naturally involved deploying an intimate knowledge of their previous employers. But them legally repeating one or two design elements isn't worth doing unless they understand what makes an entire car tick, especially with the recent bias towards unseen underfloor aero. That's why it's nonsense to suggest Mercedes should simply bolt on Red Bull lookalike sidepods to solve its problems. It's more likely such a bodge job would actually hurt performance.

Mentally taking information with him is not to imply Fallows purloined intellectual property. The FIA investigated Aston's processes last year and found "no wrongdoing". The governing body was satisfied the listed components, including aerodynamic surfaces, on the AMR22 were penned independently. Critically, Red Bull did not then protest the outcome. This avoided a repeat of 2020, when Racing Point was indeed found guilty of borrowing Mercedes rear brake duct data. The Aston similarities might therefore be attributed to a more natural process of converging around the optimum. After all, it's entirely logical for any team to try to impersonate a car which won 17 grands prix and two sprint races in 2022. And the cost cap only encourages that trend of making safer design choices, as McCullough explains.

"LAST YEAR, WE STARTED A CERTAIN WAY. IT WASN'T THE RIGHT WAY. WE ACCEPTED THAT AND WE CHANGED THAT"

It's been a good start to 2023 for Aston Martin. Fernando Alonso has been on the podium in every race of the 2023 season thus far and the team currently sits second in the constructors' title race

"We always start things with the ultimate [scenario]: 'What would you do?'" he says. "Then we say, 'What is the cost-effective thing to do?' I can't stress the cost-cap thing enough... Every session of the windtunnel, in the simulator, all the mechanical development parts, we're always evaluating those and seeing what's going to be the biggest bang for buck."

To help that wallet-tightening process, using the RB18 as a reference point to discard more radical and risky concepts is wholly sensible. What's more, the rest of the rulebook only encourages such working practices, since the Aerodynamic Testing Restrictions which limit windtunnel hours and Computational Fluid Dynamics simulations deter teams from wasting resource designing something that isn't a guaranteed hit.

Fallows has no shame in admitting that he has indeed taken inspiration from his Red Bull mentor of 16 years. He says: "I'm one of the fortunate people to have worked under Adrian [Newey] and seen his methods. One of the things I've really enjoyed with him is that he lacks any technical arrogance. He's very open to being told things he's suggested haven't worked or there are better ideas out there.

"That's something I try to bring into my own work, and I very much encourage a lot of the technical team to do. Be open-minded. That's one of his great strengths. Hopefully I've sort of carried that on."

Judging by that testimony, Newey's pre-eminence has created this green rod for his own back. His strike rate has influenced Fallows and shown that it's OK to adopt a mentality of 'If you can't beat them...'. The AMR23 does certainly look more different to the Red Bull concept than its predecessor did. But even then, the record shows that the lawmakers concluded no foul play.

REVERSE ENGINEERING: THE PINK MERCEDES

A customer engine deal and healthy rapport with donor Mercedes helped facilitate Racing Point in turning away from the Red Bull high-rake concept for the RP20. Racing Point then sent photographers trackside to snap all that made the Mercedes' title-winning W10 so potent. Thanks to some reverse engineering, these elements created the 'Pink Mercedes' from 'Tracing Point'.

While this was legal at the time, Renault successfully protested the rear brake ducts, which had been designed based on Mercedes data. These were now 'listed parts', meaning teams had to be solely responsible for their design. The FIA upheld the complaint, fined Racing Point €400,000 and docked 15 points, dropping the team a place to fourth in the standings.

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NIGHT IN THE GARAGE

Overnight during a grand prix weekend, the garages fall silent – but that doesn't mean nobody is watching...

INTERVIEW OLEG KARPOV
PICTURES HAAS

1

Peter Crolla (Haas F1 sporting director): "What you see here is our car in the garage under parc fermé conditions. At certain designated points during the weekend, we have to have the car complete and presented in a condition where it can be covered and sealed. This picture was taken on Saturday, a few hours after qualifying.

There are two loops at the back of the car (below), where you fix an FIA seal: it encloses the car within the cover and prevents work on it. This is mandatory according to the rules. This image is from Bahrain, where qualifying finishes at 7pm, and we have to have covers and seals on by 9pm. Any setup work is forbidden from the moment the car leaves the garage at the start of qualifying until the race. The seals will be removed five hours before the race, but the car will remain under parc fermé until the lights go green for the start. We've got two FIA scrutineers who are constantly in the garage when the car is unsealed.".

2

"You can also see a camera above, in the overhead pod, that's directly linked to the FIA – and ultimately, that's secondary protection to ensure nobody touches the car or works on it."

3

"There are two cables dangling from the sides: the one on the right is for the driver monitor which sits on the car during practice sessions, and then the one on the left is the umbilical, which plugs into the car as soon as it comes into the garage – we use that for downloading data, checking ERS status and so on."

4

"There's another camera at the back, which feeds into our engineering office, so we can see what work is taking place. So, if something's delayed or somebody's made a mistake, you can look into it. A few years ago one of our cars slid off the stands: nobody was hurt, and nothing was damaged, but it's important to understand why it happened."

5

"The screen on the right is showing the countdown to the next event during the competition, like free practice sessions or qualifying. In that case, it shows the countdown to 'covers on' time, so mechanics know exactly how much time they've got until the car has to be sealed. As you get closer to that moment the screen will go red."

6

"From the minute we start working in the garage, we have fire extinguishers there, and they aren't removed until the last thing is packed up on leaving. There are two small CO2 extinguishers, easy to grab if the car catches fire in the garage, and two large CO2 extinguishers in the middle of the garage, which you don't see in that shot – they're used if we have an issue in the pitlane. At the back we've got one foam and one large CO2 – they're always next to the toolbox. Also, we keep two powder fire extinguishers in the fuel area. All our guys go through quite a rigorous fire training procedure back in the UK, so they know what type of extinguisher to use on what type of fire. Wherever we go in the world, these extinguishers are always in exactly the same place in the garage: nobody should ever be having to go and look for that equipment."

7

"There are two large audio speakers on either side of the garage, used solely for entertainment reasons. Each weekend there's one randomly chosen person in the garage responsible for the music, so sometimes it can be really bad. But our only rule is that it shouldn't be offensive."

8

"In the back you can also see a rear jack which we use in the garage and in the pitlane during practice sessions and qualifying. It's simpler than the one we use for pitstops, which is more sophisticated and requires more maintenance."

9

"There's someone's water bottle on the toolbox behind the car – each team member has their own branded and named bottle."

10

"Finally, you see various paper towel drawers. There are four in the garage. One on each front-end cabinet, and one on each main garage toolbox. Motorsport is a dirty business, but we're in F1. You can see here the garage is spotlessly clean. It's the industry standard. It's presentation, it's hygiene, and I think it gives people greater attention to detail and a greater level of respect for the environment around them."

AND THE OSCAR GOES TO... THE GYM

This year's McLaren might not be up to scratch, but new boy **Oscar Piastri** is determined to be at his best after a season on the sidelines as Alpine's reserve driver. *GP Racing* digs into what it takes to transform a junior-series champ into a hardened grand prix driver...

WORDS STUART CODLING PICTURES MALCOLM GRIFFIFTHS

We've photographed Oscar Piastri in the gym. Not just any gym, of course; it's the typically just-so fitness centre in the depths of the McLaren Technology Centre, softly lit and bedecked with inspirational slogans etched into the glass. It's in rooms such as this where Oscar has been busily laying down the groundwork for his entrance to Formula 1.

There's no question that F1 machinery is a physical step up from the world of junior single-seaters: while power steering mitigates that step to a degree, the g-forces are higher, the races longer, and the rigours of travel more intense. Much of the conditioning required can only come from driving... and seat time isn't something Oscar enjoyed in great quantities through the last season where, having won the Formula 2 championship in 2021, he was warming the bench as Alpine's reserve driver before McLaren swooped to the rescue.

"Last year effectively he had a year off," says Oscar's physio Kim Keedle – who, like Piastri, is a Melbourne native. "It was a bit of a strange year because he was still travelling to all the races. When you're travelling it's hard to train, to have really good quality. The gyms aren't great in hotels. He was kind of doing marketing hours as opposed to drivers' hours. So he was at the track for long periods of time. He was still trying to find his feet in terms of being at F1 weekends, understanding media commitments, etc. So, certainly in the first half of the year, it's not like we could just train all the time.

"He was still doing base training to keep the engine topped up but there wasn't a big focus on fitness, the focus was on learning F1, getting embedded in the team and learning how to do the weekends. Since October or November last year, we've been in a pretty long pre-season. And the biggest thing we've had to adapt to in terms of Formula 1 is building a bigger cardio base – getting his cardiovascular fitness up to be able to withstand the demands of driving for two hours in a hot environment. And also the demands of travel, the ability to repeat performances week in, week out.

"And then secondly, one of the big things has been the g-forces, which are significantly higher than in F2. So just really building his neck strength

up so that he can tolerate that. There's a certain amount you can do in the gym. But really he has to be in the car to get that specific neck training. So I guess one of the good things we've had this year has been the TPC [Testing of Previous Cars] events, where he's been doing test driving in the old car, and that's the biggest thing for him to get that neck strength, so that's been really beneficial."

Alpine and McLaren resolved their differences over Oscar's move in a grown-up fashion, enabling him to complete 123 laps in McLaren's 2022 car – the MCL36 – in the Young Driver Test which followed last year's season closer. His new team then ran private tests for him in late January and early February at Paul Ricard and Barcelona, where he drove the 2021 McLaren, the MCL35M. While testing current cars is banned outside official tests, F1's sporting regulations permit teams to run previous-generation machinery (subject to certain conditions) under the so-called TPC framework.

Although pumping iron has its limits in terms of specific training, it does yield strength-and-conditioning benefits in key areas such as the shoulder girdle and accessory muscles for the neck. In an F1 car upper-body strength is less of a prerequisite for success than it is in the likes of F2 and F3, where the cars have no power steering. For the graduate driver, therefore, there's a process of transitioning that focus from the arms and parts of the shoulders to the neck, and avoiding weight gain. We're putting Oscar through his paces after a full day in the McLaren simulator and, while his neck might not have been repeatedly bludgeoned by like-for-like g-forces, his hamstrings are tighter than Ebenezer Scrooge.

It has not escaped *GP Racing's* notice that a particularly torturous piece of equipment is no longer present. In days of yore the McLaren gym featured a replica cockpit in which a crash helmet was rigged with weights and pulleys to simulate g-forces; at one pre-season event a younger Lewis Hamilton, then but a one-time world champion, did his best to stifle giggles as various members of the Fourth Estate lay spent on the floor after trying to complete a single virtual lap of the Albert Park circuit. Thankfully sports science appears to have moved on since then and that device has been consigned to the scrapper.

"Trying to load your neck up with four or five g's, for however many seconds it is and do it 10-15 times a lap for an hour and a bit – it's very hard to replicate that kind of stuff," says Piastri. "You're also trying to hold your body up in the car, you're trying to concentrate on where you're going. There's a lot of different things – simply putting a neck harness on that someone is pulling on a bungee cord, it, it helps, but it never quite gets you finished until you've jumped in the car and done some laps.

"Every time you come back for a new season, the first day in the car is always a bit rough for your body. Having those tests in the older car at the start of the year, were, I'd say, quite good for my body to get used to it.

MIND OVER MATTER

Total performance hinges on mental attitude as well as physical aptitude. While drivers are often reticent to reveal what they or some others might perceive as weakness, awareness has been growing in recent years of the importance of mental health. George Russell has a sports psychologist; and Kim Keedle's previous driver, Romain Grosjean, trod the same path earlier in his career after a number of on-track incidents in which he made poor decisions in the moment.

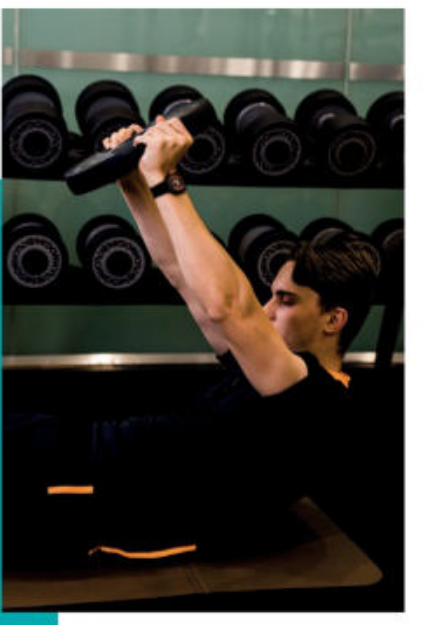
If further evidence is needed, you need look no further than the many episodes of *Drive to Survive* where the physio must act as 'driver whisperer' as well as trainer-taskmaster.

"Oscar has a mental coach," says Keedle (pictured below). "And I work very closely with her so the messages and the language coming from me are the same as what they've spoken about. It's to help him get in the zone, to help him understand the process and the mental side of performance. But of course, because I'm with him all the time, and I'm there before he gets in the car, I'm the last person he speaks to before he speaks to his engineers. I'm the one that's prompting him and giving him those cues to make sure it's at the forefront of his mind when it gets into the car."

To some extent the process is one of focus and of filtering out noise. This kind of process thrives on routine and repeatability, which is why the period immediately before the race start is so important. At this stage of the grand prix weekend there are a plethora of distractions which can only be combated by sticking to a properly calibrated system.

"We're still finding our feet, getting to know the team and how much time we can allocate, but yes, we do have a routine," says Keedle. "At the moment we have about an hour to ourselves before he gets in the car and drives out of the garage. We break that down into him just switching off and having a bit of chill time because he's had media and engineers' meetings all morning. Then we'll start getting him into a more appropriate sort of mental space where he will do some mental exercises and then we'll go into physical warm-up. We have a set plan because it's beneficial for performance.

"For us, more than anything, it's about transitioning to race mode. That's his mental switch to go, right, once the visor's down, it's game on, let's go."



By the time I got into official testing I was fine. Bahrain isn't the most physical circuit we go to – Saudi was a bigger challenge on the neck."

Young drivers require a different training regime than older drivers because their bodies are still developing and they haven't accumulated as much training stress. An older driver with more base fitness can, for instance, have an occasional day off or decide they're going to ride their bicycle rather than hit the gym – up to a point. Keedle used to be Romain Grosjean's physio at Haas before joining Oscar at the beginning of 2021, so he has experience at both ends of the driver-age spectrum.

"When I first met Oscar, he had some good training exposure through the previous [Alpine] Academy," says Keedle. "But he still had a pretty young training age – he hadn't trained for as many years as, say, a junior footballer or someone like that, who starts training at 10. Physically, he hadn't had that so there was a little bit of work to do when we first met in terms of just general movement, general strength, general cardio ability.

"He's been steadily progressing over the two years and he's still only just turned 22. So he's still probably got another three or four years until he sort of reaches his physical maturation. And so we're still just working with a long-term plan to get into that.

"The biggest thing with Oscar in terms of training has been teaching him about the training process, training philosophy, making him autonomous so that when he wants to train, he understands the benefits – so that if I'm not there he can just go into a session, and I know it's going to be good quality. That's been one of the big things that we've been trying to achieve with him, which has been great – promoting good habits and making them very consistent and repeatable."

"WHEN I FIRST MET OSCAR, HE HAD SOME GOOD TRAINING EXPOSURE THROUGH THE PREVIOUS [ALPINE] ACADEMY. BUT HE STILL HAD A PRETTY YOUNG TRAINING AGE – HE HADN'T TRAINED FOR AS MANY YEARS AS, SAY, A JUNIOR FOOTBALLER OR SOMEONE LIKE THAT, WHO STARTS TRAINING AT 10"

It helps that Oscar has a remarkably professional outlook for a young driver. Before connecting with Keedle, he took responsibility for his own training as well as organising much of his life. If moving to the UK, leaving his family in the southern hemisphere, was in any way traumatic, it doesn't show since he is outwardly a textbook laid-back Aussie. It's in the details you see the inner steel: rocketing through the junior series at a pace which appeared to take the Alpine young-driver setup by surprise, then working with his management to secure a better offer when it became obvious Alpine didn't have much of a plan for him. He talks about his work with a seriousness that belies his age, a subtle gravitas which indicates an awareness of the value of hard work augmenting natural talent.

"I'm reasonably good with it," he says. "I could probably be a little bit

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MSV 2023 SEASON HIGHLIGHTS

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22/23 April	Donington Park	Kwik Fit British Touring Car Championship
29/30 April	Donington Park	Donington Historic Festival
29/30 April/1 May	Oulton Park	Bennetts British Superbike Championship
1 May	Cadwell Park	Modified Live
6/7 May	Brands Hatch	Kwik Fit British Touring Car Championship
6/7 May	Cadwell Park	Historic Wolds Trophy
13/14 May	Cadwell Park	Vintage Motorcycle Club Championships
19/20/21 May	Donington Park	Bennetts British Superbike Championship
20/21 May	Snetterton	Kwik Fit British Touring Car Championship
27/28 May	Brands Hatch	Masters Historic Festival
27/28 May	Donington Park	British GT and GB4 Championships
3 June	Oulton Park	BMW Sommerfest
4 June	Brands Hatch	Brands Britannia
11 June	Brands Hatch	Tunerfest South
17/18 June	Brands Hatch	American SpeedFest 10
17/18 June	Oulton Park	Kwik Fit British Touring Car Championship
17/18 June	Snetterton	British GT and GB3 Championships
18 June	Cadwell Park	Vintage Motorsport Festival
30 June/1/2 July	Donington Park	Motul FIM Superbike World Championship
1 July	Oulton Park	Supercar Pageant – Featuring GT Cup
1/2 July	Brands Hatch	Super Touring Power Festival
7/8/9 July	Snetterton	Bennetts British Superbike Championship
8 July	Brands Hatch	Bernie's V8s And Historic Outlaws
8 July	Oulton Park	Autos de France
9 July	Donington Park	Vintage Motorsport Festival
14/15/16 July	Brands Hatch	HSCC Legends of Brands Hatch
15 July	Oulton Park	Ford Power Live
21/22/23 July	Brands Hatch	Bennetts British Superbike Championship
22 July	Oulton Park	Tunerfest North
28/29/30 July	Oulton Park	Historic Gold Cup
29/30 July	Donington Park	CRMC Classic Motorcycle Festival
6 August	Brands Hatch	Mini Festival
12/13 August	Donington Park	Convoy in the Park – British Truck Racing
13 August	Brands Hatch	Festival Italia
13 August	Cadwell Park	Cult Classics
19 August	Oulton Park	U.S. AutoShow
20 August	Donington Park	Tunerfest Midlands
26/27 August	Donington Park	Kwik Fit British Touring Car Championship
26/27/28 August	Cadwell Park	Bennetts British Superbike Championship
3 September	Brands Hatch	Festival of Porsche
9/10 September	Brands Hatch	British GT and GB3 Championships
15/16/17 September	Oulton Park	Bennetts British Superbike Championship
16/17 September	Snetterton	British Truck Racing Championship
17 September	Brands Hatch	Ford Power Live
24 September	Brands Hatch	Go Japan!
23/24 September	Cadwell Park	Vintage Motorcycle Club Championships
29/30 Sep/1 Oct	Donington Park	Bennetts British Superbike Championship
7/8 October	Brands Hatch	Kwik Fit British Touring Car Championship
13/14/15 October	Brands Hatch	Bennetts British Superbike Championship
21/22 October	Donington Park	British GT and GB3 Championships
22 October	Snetterton	Modified Live
4 November	Oulton Park	Neil Howard Stage Rally and Fireworks
4/5 November	Brands Hatch	British Truck Racing and Fireworks
19 November	Cadwell Park	Stage Rally and Fireworks

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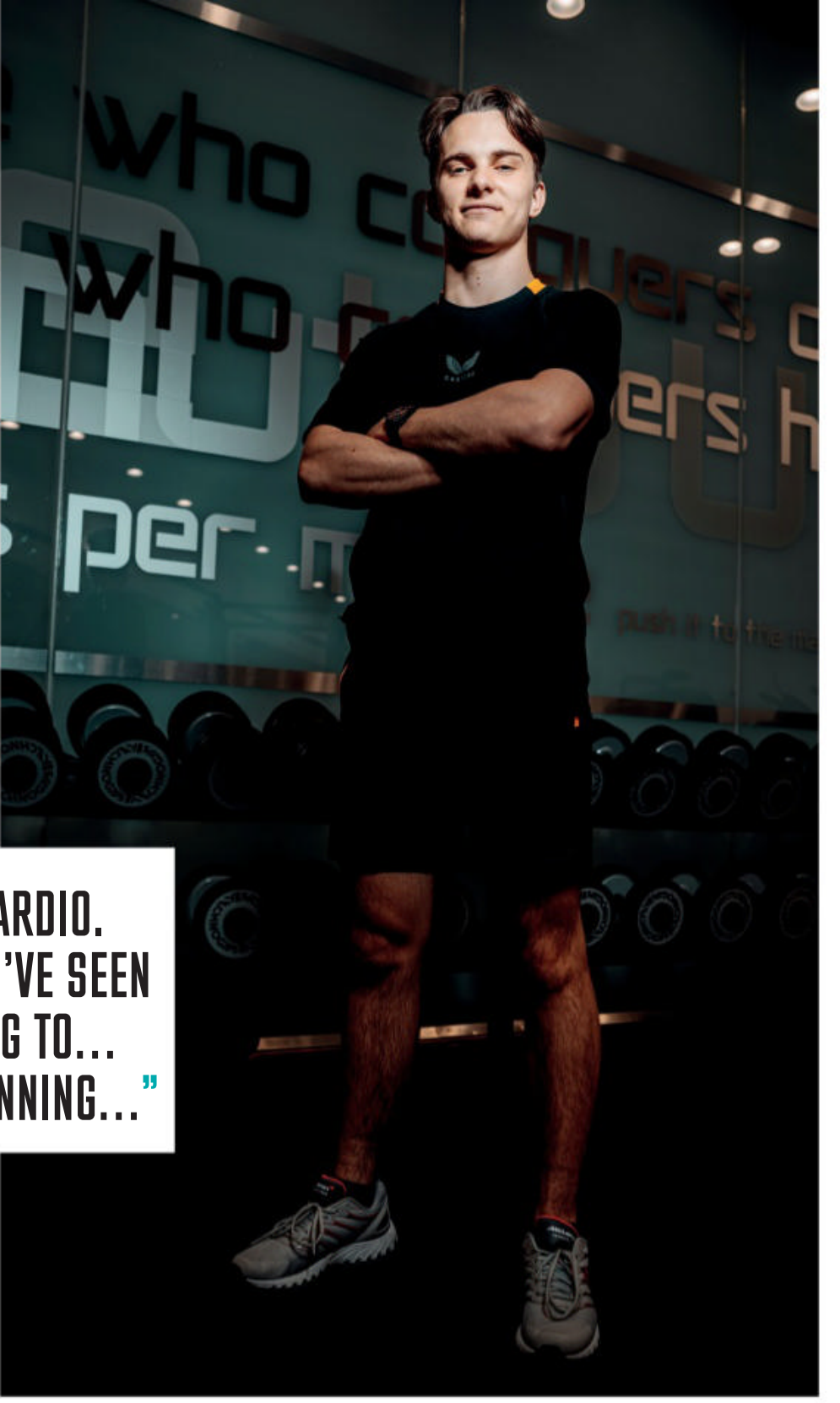
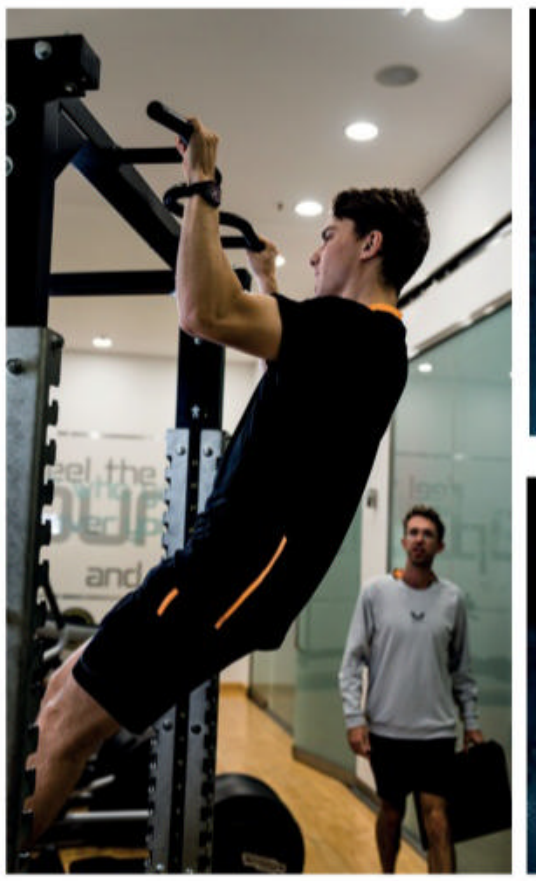
better, as I'm sure most people could. But yeah, on the whole, I'm pretty good with that. Before Kim I was more or less training by myself, pretty much. I was getting guidance but the actual sessions it was just up to me to turn up. So I think there was an element of the last little bit of strictness, especially on the days where you really don't feel like it, having someone there pushing you definitely helps."

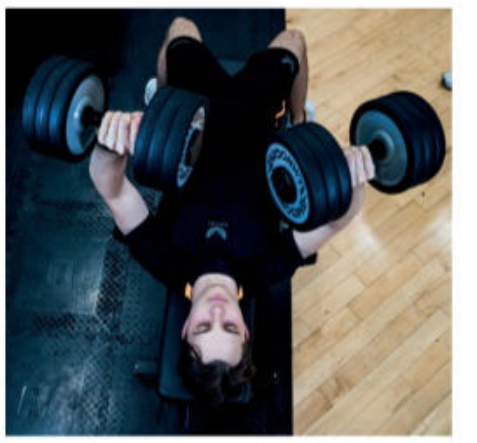
A cynic might opine that while all this attention to detail in Oscar's training is commendable, 90% of the preconditions for success lie in the car, and the MCL37 is currently far from a winning proposition. As this issue of *GP Racing* closes for press the technical team is undergoing a restructure and a performance upgrade package is expected to be ready for the Azerbaijan GP. Even this, at best, will be a short-term solution to better compete in the midfield. But the events of the Australian GP have provided a timely reminder that in F1, pretty much anything can happen and a smart, well-prepared driver can profit from being in the right place at the right time.



"I DEFINITELY PREFER STRENGTH TRAINING OVER CARDIO. CYCLING I DON'T GET INVOLVED WITH TOO MUCH. I'VE SEEN TOO MANY PEOPLE GET INJURED. BUT I'M STARTING TO... 'ENJOY' MIGHT BE A STRETCH BUT I *TOLERATE* RUNNING..."

McLaren's methodology over the past four seasons has been to be the best it can be in every element of its track operations so that when it produces a race-winning car it'll be ready to fight at the front of the field. In that context Oscar's preparations are business as usual for one of the most historically successful teams in F1. He's already sharpening up for the more physically and mentally difficult races of the season by undergoing what Keedle obliquely refers to as "heat-specific training".





"It's basically going into a very, very hot room and doing exercise in there, trying to acclimatise yourself," explains Piastri. "It's obviously a bit more scientific than that! The short story is just getting yourself comfortable with being hot, and trying to get some adaptations for that.

"The main focus, not just in F2 but for my whole junior career, was trying to be strong enough in my upper body to turn the wheel. Whereas F1 it's much more firstly on my neck and, as Kim was saying, the supporting muscles to that. But also being able to survive a race that's two hours long, and places like Singapore and Saudi Arabia where it's hot. That [Saudi] was a big one so having a good cardio base for that was very important."

With the opening trio of races in the bag, including a surprising points finish from 16th on the grid on home turf in Melbourne, Oscar's focus will turn to consolidating this new routine over the coming months. Inevitably there will be elements that grate. Jenson Button was approaching his 30s before he developed a love for triathlons. Yuki Tsunoda hates the gym so much that his team boss made him move closer to the AlphaTauri factory, so training could be enforced and a junk food ban maintained. It's certainly beneficial not to have a training-averse mindset.

"I definitely prefer strength training over cardio," says Oscar. "Cycling I don't get involved with too much. I've seen too many people get injured. But I'm starting to... 'enjoy' might be a stretch but I *tolerate* running..."

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WORDS ALEX KALINAUCKAS
PORTRAIT MARK SUTTON/MOTORSPORT IMAGES

CARLOS SAINZ

Ferrari came into the 2023 season hoping a refinement of its existing package would help it get back on terms with Red Bull. Instead it's had its worst start since 2014 and the whole Scuderia is hurting. This more than anything, says Carlos Sainz, is supplying all the motivation required for its latest recovery job

How does the mood in the Ferrari camp compare with early 2021 and 2022?

For sure it's one of the toughest moments – I'm not gonna lie. Since 2021 we've been on the way up. And then, this year, we expected at least to find ourselves in a similar position but unfortunately there's a team named Red Bull that have killed the opposition, coming up with a car clearly superior to everyone else's. If you look at Ferrari, we're there with Mercedes. We're not too far from Aston Martin in race pace, but there's one team that has nailed it and this puts us a bit on the backfoot again. But at least we know where we got it wrong. It's very clear to us where the weaknesses of our car lie, where the strengths of the Red Bull are. And the whole team is pushing in the same direction, trying to cut that deficit.

Are you struggling with the SF-23 like your early issues with the F1-75?

In a way, I miss 2022 because at least we knew I had a car under my belt that was able to win races and pole positions. This year, the feeling of the car is a bit better – especially in the races. I'm not struggling with anything in particular on the driving side, it's that I haven't put together any good qualifying laps. The races, I've done pretty much what the car can do right now, which is not a lot. I'm just waiting to see if the upgrades improve the feeling, improve how we're able to race with the car because at the moment we're very limited – we cannot race people too much because the car is difficult in dirty air, we eat the tyres. It doesn't allow you to push in the race to overtake people. We need to tyre-manage a lot.

What's wrong with the car? Does it stem from trying to be quicker in a straight line?

Honestly our analysis from the first few races is there's no fundamental issue with the car, it's just a very peaky car – very unpredictable in the race. It eats the tyres quite a lot. So, it's just [that] we need to improve our package. It's just too peaky and we need to find a way to calm it down a bit, which is what also makes the car difficult in the race. The good thing is that everyone at Ferrari knows it. If we all push in the same direction, I'm convinced this team can turn it around. Not in a short period of time, but in a medium period of time.

Are there any tracks coming which may suit the car more?

We've always been good in Monaco! [At least]

> **IF WE ALL PUSH IN THE SAME DIRECTION, I'M CONVINCED THIS TEAM CAN TURN IT AROUND**

the last few seasons. But at the moment the Red Bull is superior to everyone. It's superior in quali, in races, in straightline speed, in medium/low-speed corners, superior with tyre management, superior over the kerbs and bumps. It clearly shows we need to change something. We need to go and check something very different from where we are now. I think the extremely good performance at the start of last season made us keep pushing with this concept, with this project of car. But we realise now Red Bull has a clear advantage everywhere and that we need to start looking to our right and to our left.

You and your team-mate recently hit out at Italian media reports of Ferrari being "in crisis" – why did you feel the need to do that?

I can tell that the Italian media and the tifosi want Ferrari to be up there. What they need to realise is that no one is more upset or angry or unhappy with the situation than every single [team member] here. Every driver and mechanic in Marenello – we're the ones who aren't happy, the first ones that don't like the situation and we're the ones who are pushing flat out to revert it. Because it's also our egos, our performance. We're proud to be Ferrari and we want to put Ferrari up front. And sometimes the comments, they're more of a distraction and bringing us down than helping us a bit to bring up or just putting relevant or decent criticism out there that we would accept.

TWO BECOME ONE

In 2003 there were no live streams of Formula 1 races, no instant replay, no app with live timing data – and most definitely no Twitter to provide a platform for noisy post-race post-mortems. This is the previously untold inside story of how a humble VHS video tape enabled the Jordan team to claim a momentous win – five days after the flag...

WORDS MAURICE HAMILTON

PICTURES motorsport IMAGES FIA, MARC CORMICAN

Twenty years ago this month, the FIA didn't realise it had cocked up the finishing order of the Brazilian Grand Prix. It took the persistent detective work of the IT team at Jordan Grand Prix to prove Giancarlo Fisichella had won at Interlagos and oblige McLaren and Kimi Räikkönen to hand back the Brazilian trophy at Imola two weeks later.

This administrative muddle ran true to Formula 1 form at the time. Ferrari's Michael Schumacher, the pre-season favourite, languished a distant eighth in the championship after three races, a situation as unlikely as Jordan winning a grand prix. Eddie Jordan would have celebrated a point for eighth place, never mind the 10 that eventually came his way. The 2003 season was all about survival for Jordan, a mission seemingly made even more difficult just before the start in Brazil when rain added to the track's inherent

hazards. The Jordan technical crew, led by Gary Anderson, saw it differently.

The unpredictable conditions would allow Anderson to throw the strategic dice after Fisichella had claimed an impressive eighth on the grid (the Italian having qualified 13th and 14th previously in Australia and Malaysia). With each driver limited to a single lap of qualifying (new for 2003), Fisichella's brave performance was being dismissed by those who believed the Jordan was running light and taking temporary advantage of another substantial change to the regulations.

In a bid to bring variety and deal with concerns about Ferrari and Schumacher winning the title for a fourth successive year, this first iteration of the parc fermé rule in operation today meant competitors had to qualify their cars in the condition in which they intended to start the race. With refuelling allowed, this meant a low fuel load would bring speed during qualifying on the understanding that the necessary and early stop for fuel could heavily compromise race strategy. As the rain fell, however, all bets were off – as the race should have been, too, given the biblical proportions of the Brazilian deluge.

It wasn't long before the inside of Turn 3 at the bottom of the Senna Esses acted like a bath plughole that had become blocked by drivers tearing out their hair. A wet-weather tyre with grooves big enough to hold Bernie Ecclestone's wallet would have had difficulty cutting through the river of water. Even when no less a luminary than Schumacher joined the wrecker's yard on the outside of the corner, officials saw fit to have the race continue as if nothing had happened.

The Jordan crew, meanwhile, had been playing the odds by bringing in Fisichella at the end of lap eight. Giancarlo wasn't best pleased with having a full load of fuel to add to his difficulties in such treacherous conditions but, as the race continued and the rain eased, he began to see the wisdom of the tactic as others either crashed or made their pitstops and his race position went into single figures. When Rubens Barrichello, having started from pole, suffered the heartbreak of running out of fuel while leading on lap 46, Fisichella was elevated to fourth, which quickly became third when Ralf Schumacher pitted his Williams-BMW.

Led by the McLarens of David Coulthard and Räikkönen, Fisichella had visions of actually improving his unexpected potential podium position, particularly when Coulthard dived into the pits for a second scheduled stop. No one was sure precisely how much longer the grand prix would last thanks to Safety Car interventions having extended the running time. It was possible the race could be stopped at three-quarter distance (54 laps – which wasn't far off) when maximum points would be awarded.

Fisichella didn't care about the precise number of points as he took the lead when Räikkönen ran wide at the beginning of lap 54. They finished the lap 0.9 seconds apart with the Renault of Fernando Alonso chasing hard a distance behind in third. Then came another crash, this one more dramatic than anything that had gone before.

Mark Webber was looking for ways to keep his worn intermediates alive when the Jaguar let go as he crested the rise onto the pit straight.

Mark Webber was struggling on worn inters when he crashed on the pit straight, setting in motion the chain of events that led to the chaos

The Safety Car was deployed for a fifth time, Fisichella and Räikkönen picking their way through wreckage strewn across the track before the McLaren driver dived into the pits for his second stop. Alonso, still pushing hard, smashed into one of the Jaguar's errant wheels, adding to the scene of destruction and prompting the red flag. Fisichella picked up the Safety Car and returned to the pit lane – where the rear of the Jordan overheated and caught fire. That's a minor detail when you think you've won your first GP.

Eddie Jordan, receiving congratulations from Peter Sauber among others, was beside himself. So was the Jordan pit crew as they gathered beneath the podium. After an interminable delay, a subdued Fisichella appeared – and made his way to the second step. The two-lap countback meant that Räikkönen had been declared the winner because he had been in front at the end of lap 53. Second place was actually a bit of an anti-climax. No matter. Eight points will do nicely, thanks very much.

As various members of Jordan's senior management headed for home, Mark Cormican, Jordan's trackside IT support engineer, remained behind at the circuit.

"About three hours after the race, I received a phone call from Simon Cayzer, one of our engineers," said Cormican. "They were at the airport and starting to question the result in more

Michael Schumacher (Ferrari) and Antonio Pizzonia (Jaguar) were just two of six cars to spin out of the race at the Turn 3 Senna Esses

Webber's Jaguar came to rest against the barriers (above) and he was able to extricate himself from his stricken car before Alonso crashed (below)

Jarno Trulli (above) avoided the substantial debris from Webber's shunt. Fisichella (below) kept his head during all this mayhem

detail. I was asked to secure a copy of the FIA's official timing report, normally issued after each race but, for whatever reason, ours hadn't been delivered. The engineers wanted to know on which lap the race had been stopped. I obtained a copy from BAR-Honda and noted the race had stopped on lap 55. I called Simon, gave him the news, and put the report in my laptop bag, in readiness for dropping off at the factory on my return first thing on Tuesday morning before going home."

Meanwhile, not realising just how crucial this would become, the team had recorded the live race feeds and other information to video tape. Cormican explains why: "Formula One Management provided 10 television channels to the pit garages. The first four were timing pages; the remaining six were various TV pictures covering things such as in-car footage, pitstops and the pictures going out to the world feed. Standard procedure at the time was for us to record all the sessions of the world feed onto VHS for review later by the drivers and engineers. But this race was different. In addition to recording the television footage, we were also recording timing on Page 1. The reason for this was simple, and the coincidence that we were doing so at this race, uncanny.

"During the previous season, the engineers had been working on a race strategy program.

Who needs a weather satellite when you've got 'Big Dave'?

F1 strategy is on a different planet today compared with 2003. It has gone from a seat-of-the-pants operation, relying heavily on what a driver feels and thinks as the grand prix unfolds, to a disciplined support group of technicians reading the race and understanding the bigger picture with its multitude of variations.

Nothing escapes detailed analysis: tyre degradation, track evolution, pitstop time loss, GPS readings, ease of overtaking, competitors' performance. All of this is fed by thousands of data samples pumped into the system every second. Plans for different scenarios are constantly monitored as 40 engineers run live simulations non-stop in mission control centres, located at team bases miles from the track dominating their lives that Sunday afternoon.

Weather patterns are another crucial piece of the strategic jigsaw. Even in 2003, this would not have been new to Jordan, a team renowned for thinking on its feet.

In 1999, when the likes of Ferrari and McLaren were wired into satellite weather predictions, Jordan would call the local airport, asking for a weather forecast. At Magny-Cours, Jordan went one better. Crew member 'Big Dave' took an umbrella and mobile to a field some distance away, but in direct line with nasty clouds being carried towards the track by the prevailing wind.

When the rain arrived, Big Dave called the pitwall with details of its strength and, more important, its duration. Based on this live evidence that the inclement weather looked set to last, Jordan filled Heinz-Harald Frentzen's car to the brim during the pitstop for wets and out-ran the opposition to win for a second time. The fourth and final GP victory in Brazil four years later would involve smart thinking of a different kind.

Barrichello led the first eight laps, all behind the Safety Car, and then looked set for the win when Coulthard retired, only to run out of fuel on lap 46

Code was developed back at the factory, but no raw timing page data was available. One of the main problems was accurately entering the lap chart information and timing for all 20 cars for every lap of the race. Attempts to do this manually had proved well-nigh impossible. So, we hatched a plan to use a video capture of Page 1. Scanning this into a computer would enable real-time collection of the lap information. This would then provide raw material for the engineer to refine and complete his code and improve the strategic planning of pitstops. It was decided to ship the recorder to the first three flyaway races of 2003, Brazil being the third.

"On Tuesday afternoon, I received a call at home from Simon. He wanted to know when the freight would get back to the factory, as the race video would be in the freight and this would be crucial in proving Fisi [Fisichella] had actually started lap 56 when the race was stopped. In which case, the count back should have been to lap 54 – when he was leading.

"Ten minutes later, I was in the factory and joined Simon, Gary Anderson, Rob Smedley [race engineer] and others as we sat and watched the crucial part of the race. We counted the seconds from Fisi passing the debris until the Red Flag message appeared on screen. Simon was adamant that Fisi would have crossed the line and reached the first corner. Then someone mentioned that a journalist had said he'd been watching the timing screen in the media centre and noticed that the page had changed just after the race – and then again, about 10 minutes later. We then remembered the Page 1 tape in the freight. Our video would provide the proof.

"WE COUNTED THE SECONDS FROM FISI PASSING THE DEBRIS UNTIL THE RED FLAG MESSAGE APPEARED ON SCREEN. SIMON WAS ADAMANT THAT FISI WOULD HAVE CROSSED THE LINE AND REACHED THE FIRST CORNER"

"Fate would play another card as the flight carrying our freight was delayed by almost 24 hrs. It was mid-morning Thursday before the video was retrieved. Our appeal was due to be heard in

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In addition, the "Promessa" Automatic Chronograph also functions as a standard wristwatch that can be used to tell the time. The wristwatch was designed in Switzerland and made in Japan. It comes in a variety of bright sunburst dial colors and is made of stainless steel.

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Some of the screengrabs that backed up Jordan's case with the erroneous screen (far right) that led the FIA to declare Räikkönen the winner

Fisichella and team boss Eddie Jordan celebrated the victory after being handed the trophies at Imola, with a smiling Ron Dennis looking on

Paris the next day. Screen shots were taken of the important pages with the critical details:

15:46:19 1st FIS 54 laps completed, 2nd RAI 0.9 seconds gap to leader, 3rd ALO 6.6 seconds gap to leader

15:47:45 1st FIS 55 laps completed

15:47:49 RAI pits from 2nd

15:47:51 RED FLAG

"Bingo! There it was. Fisi had crossed the line, completing 55 laps and had started lap 56 six seconds before the Red Flag was shown. We now had evidence from the FIA – no less! – to prove the team's telemetry was correct. Fisi had completed 55 laps."

Further examination of the timing screen would show the following:

15:47:51 RED FLAG 1st FIS 55 laps

15:48:16 RED FLAG 1st FIS 55 laps, 2nd RAI 0.9 seconds gap to leader, 3rd ALO 6.3 seconds gap to leader

15:48:18 RED FLAG 1st FIS 54 laps, 2nd RAI 0.9 seconds gap to leader, 3rd ALO 6.3 seconds gap to leader

15:57:42 RED FLAG 1st FIS 54 laps, 2nd RAI 0.9 seconds gap to leader, 3rd ALO 6.3 seconds gap to leader

15:57:43 RED FLAG 1st RAI 53 laps, 2nd FIS 0.8 seconds gap to leader, 3rd ALO 6.6 seconds gap to leader

In the face of Jordan's evidence, the FIA had no hesitation – no option, in fact – in amending the results. No one could satisfactorily explain why the timing page had been changed at 15:57:43. It transpired the FIA had kept no record of the timing pages (a fact that was rectified for all subsequent races). Jordan's video had provided the sole and incontrovertible evidence.

Had the original results stood, three-quarters distance would not have been reached. The race should either have been restarted or half points awarded. Race officials had done neither. In addition to securing the victory, Jordan had therefore nudged the race distance into the final quarter and saved the FIA from sinking even deeper into a mire of its own making.

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ZHOU GUANYU

10 THINGS I LOVE

An occasional series where F1 people reveal their favourite things, starting with China's first F1 driver

NBA

Basketball is one of my favourite sports to watch. Formula 1 has always been my favourite, of course, but the NBA is exciting too. They can really turn the game around very quickly: a team can be down 15 points and everything can change in three minutes. It's always exciting to watch and a lot of the games come down to the final seconds.

Sneakers

I love fashion. I'm sure everyone who follows me on social media knows that. It is sort of one of my passions outside of racing. I would definitely like to do more in that area in the future. I'm definitely planning to have a brand and then maybe try to do something in the fashion industry, maybe when I stop racing. I have quite a large collection of sneakers at home. I don't even know how many, to be honest. Some of them I've never worn and probably never will. I put them on the shelf and it just feels good to have them there because some of them are really like works of art.

Chocolate fondant

It's a dessert. It's like melted chocolate in a chocolate cake. It's just very good. I can't have it too often though. Maybe once a year, but it's always a nice treat!

CS:GO

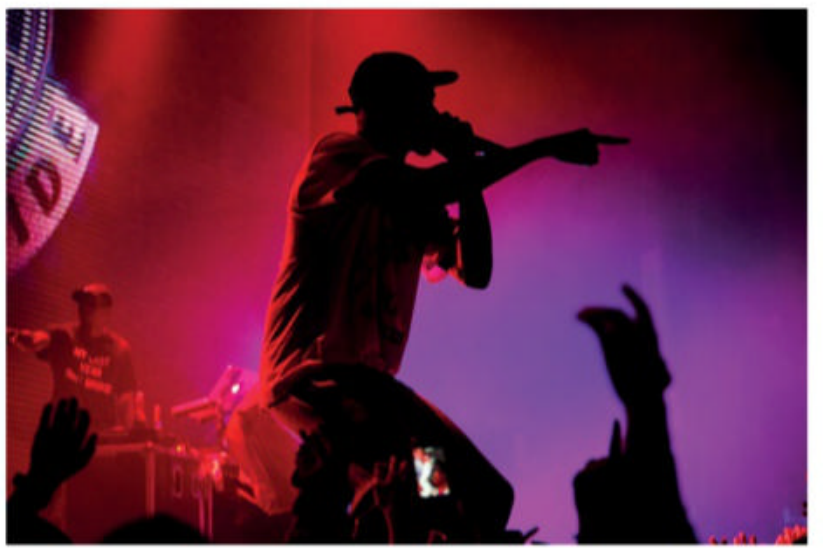
Of course I also play F1 22, but mostly CS:GO ['Counter-Strike: Global Offensive' video game]. It's a shooter. And yes, I play it more than F1. I even checked recently and I think it was 280 hours or something like that on CS:GO and only 70 hours on F1. But that's including the time when I just had my PC on while I was doing something else!

Badminton

I also play basketball and football, but I think I'm best at badminton. I am actually quite good. People tend to underestimate how physical it is. Of course, when you're just playing in the park it's easy, but when you're playing real badminton you move a lot. And I mean a lot! Two hours of badminton feels a lot longer than, say, two hours of football.

Hip-hop

I like rap music, hip-hop. There are a lot of Chinese hip-hop bands that I listen to. GAI is one of my favourites, and I also like Higher Brothers and some other bands.



Movies with The Rock

I like comedy movies and my favourite actors are probably Kevin Hart and Dwayne Johnson, The Rock. They're funny together! But I've followed The Rock from his wrestling days. He's cool.

Coffee before the race

That's Valtteri's influence. I never liked coffee before I met him. But now I always have one before the race. I like it quite a lot and I'd even say it can be useful in a way. It makes you a little less nervous and somehow improves your concentration.

Karaoke

I like to sing and of course I like karaoke. But I really need to work on my singing skills.

New car interior smell

Most people don't like the smell. My dad, for example. He hates it. He'll have all the windows open 24/7 in a new car. But I like it. It feels kind of fresh, you know? It's a bit like that, even in F1, when you jump into a new car. It's a bit different, but it's close in a way.

McLAREN

Kimi Räikkönen's first grand prix winner – after a bonus lease of life

MP4-17

NOW THAT WAS A CAR

No. 117

WORDS
STUART CODLING
PICTURES
JAMES MANN

The matrix. No, not the sci-fi movie franchise which played to diminishing returns around the turn of the century, but an abstruse management system which abided in similarly futuristic environs at the same time as Keanu Reeves *et al* were raging against the machines on the big screen. McLaren's star technical director Adrian Newey disliked the company's brand new Foster & Partners-designed Technology Centre, feeling it cold and clinical – but he truly despised the so-called 'matrix management system' which had been imposed on his technical department.

And, unlike the stars of *The Matrix*, Newey couldn't warp the space-time continuum and engage in athletic feats of kung fu to escape this dystopia.

The MP4-17 was conceived as the company was preparing to move into its new factory and the first product of the matrix management regime in which Newey toiled increasingly unhappily before reaching for the eject button a couple of years later. For better and for worse this methodology would prevail at McLaren for almost two decades before Andreas Seidl consigned it to the memory hole in 2020.

"A bit of a clumsy design, certainly not one of my best" is how Newey describes the McLaren MP4-17 in his autobiography *How To Build A Car*. It's significant that a car which ended up contesting not one but two grand prix seasons should merit little more than a cursory few sentences, less time than Newey spends unpacking the perceived shortcomings of the MTC with its "Orwellian" underground access corridors, its "ordered greyness" and team boss Ron Dennis's oppressive clear-desk policy.

"Not an environment in which I, among others, found it easy to be creative," Newey writes with an audible shudder at the memory. "When we first moved in, we weren't even allowed glasses of water at our desk, and absolutely no tea or coffee or personal effects. Somebody pointed out that it was probably illegal to deny workers water at their desk, so he had to relent on that, but not on the tea or coffee…"

Although the MP4-17's design phase predated McLaren's full move from various units in Woking industrial estates to the futuristic ziggurat that is the MTC, its aerodynamics were honed in the new on-site windtunnel. It's easy to see how one of the greatest creative engineers in F1 has conflated various events of this era into one hard-packed container of misery. In mid-2001, as the MP4-17 concept was in its earliest stages, Newey was the subject of a contractual tug-of-war between Jaguar and McLaren. The MP4-16 had been troubled

THE MP4-17 WAS CLEARLY AN EVOLUTION OF ITS PREDECESSOR BUT ARRIVED WITH A NUMBER OF AGGRESSIVE NEW CONCEPTS

by reliability problems and lack of correlation between windtunnel research and on-track performance, and engine performance had been pegged back by a ban on aluminium-beryllium. On top of that, engine builder Ilmor Engineering co-founder Paul Morgan was killed when his vintage aeroplane caught a wheel in a rut and overturned after landing.

A certain froideur had developed between Newey and Ron Dennis after their last contract negotiations so it came as little surprise when rumours developed that Newey was being wooed by his old friend Bobby Rahal to move to Jaguar Racing. Having put pen to paper Newey got cold feet as he realised the deadening effect Ford corporate politics would have on the team, and he was persuaded by Dennis that Rahal's time in the Jaguar hot seat would be short. While that ultimately proved to be the case, the saga terminally soured relations between Dennis and his star engineer. Matrix management – a 'flat' structure with multiple lines of reporting rather than a traditional hierarchy – duly followed. Newey felt it was a punitive wing-clipping exercise which resulted in car design by committee (or, in his words, "an unnecessary and wretchedly unworkable system of department heads and 'performance creators'").

As 2001 drew to a close, double world champion Mika Häkkinen embarked upon a one-season 'sabbatical' from which he would not return. His replacement, Kimi Räikkönen, was on the face of it a plug-in 'Fast Finn' replacement, though certain elements of his outlook on life would not endear him to Dennis in the longer term.

The MP4-17 was clearly an evolution of its predecessor but arrived with a number of aggressive new concepts as part of the package, most noticeably the angled lower front suspension wishbones. 'Twin keel' had become a buzzword during the previous season based on the performance of Räikkönen's Sauber, which featured a radically undercut nose cone to which the lower wishbones mounted via short vertical extensions on each side rather than a single 'stub' under the nose. Theoretically this removed a blockage to airflow beneath the nose and onwards to the sidepods and underfloor. Rivals rushed to copy.

At the rear, an even slimmer engine cover and tightly packaged 'Coke bottle' alluded to a very different V10 propelling the car. Mercedes had opened the vee angle from 75 to 90 degrees, fashionable at the time but not as extreme as the 110-degree unit in the contemporaneous Renault R202. In theory this enabled a lower centre of gravity as well as an aerodynamically beneficial lower rear 'deck', but brought with it rigidity and vibration issues – to the Renault at least.

Mercedes' reliability problems weren't as merciless as

those which afflicted Renault but the FO 110M proved to be a problem throughout the season. It could rev to and beyond 18,000 rpm but on several occasions Räikkönen and team-mate David Coulthard had to run at reduced revs to head off the threat of blow-ups. There was a learning process, too, with the suspension geometry. A switch to Michelin meant accommodating the different characteristics of the squarer-shouldered French rubber, which required less aggressive camber. And, as with other teams adopting variations of the twin-keel front end, McLaren found the aerodynamic benefit came with inherent compromise to the stiffness of the wishbones. Having to wait until January 2002 to start evaluating the new tyres on track required the engineers to build a lot of adjustment potential into the initial suspension design, meaning it wouldn't be fully optimised until later in the year.

Although Räikkönen finished third in Australia on his maiden appearance for McLaren, helped by Ralf Schumacher eliminating one of the dominant Ferraris in an idiotic first-corner shunt, there were slim returns for the McLaren drivers early in the season. Coulthard collected two podiums before recording the MP4-17's first win, in Monaco, while Räikkönen suffered the majority of the unreliability (although he authored his own DNF in Monaco). Kimi might have won in France but spun out

of the lead when he was the first to encounter Allan McNish's expired Toyota at the hairpin; marshals energetically waving yellow flags were unaware they should be indicating the presence of oil, too.

Coulthard's victory in Monaco would be the high point of an otherwise bruising season in which the MP4-17 was outgunned all round by Ferrari's dominant F2002, and on power and reliability by the BMW P82 powering Williams' manifestly less sophisticated FW24. But the MP4-17 was destined to expand the modest haul of 65 points which left McLaren third to Ferrari and Williams-BMW in 2002.

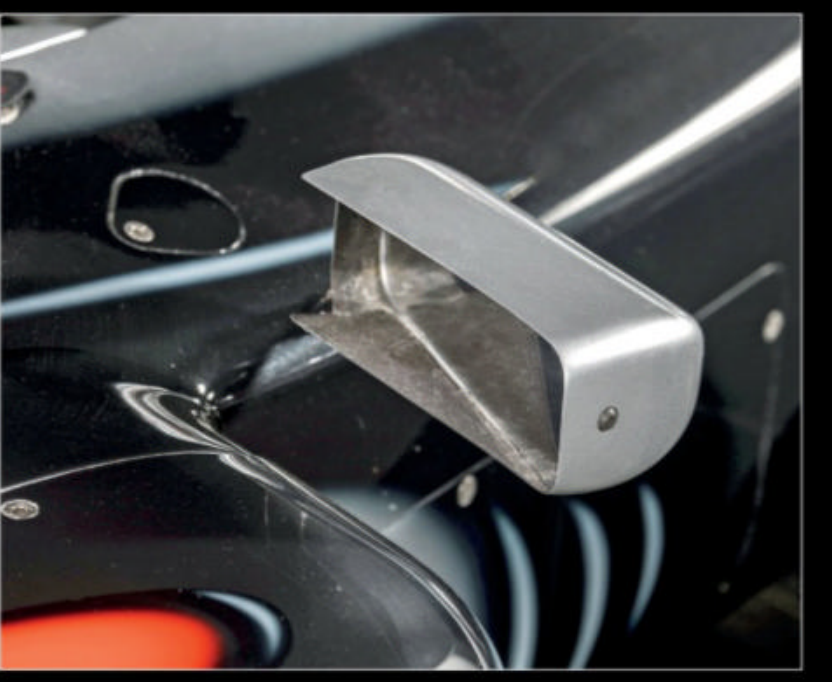
Believing only a radical new direction would bring McLaren closer to Ferrari, Newey and his fellow 'performance creators' spent much of the second half of the 2002 season working on an all-new concept for the 2003 car, the MP4-18. This would

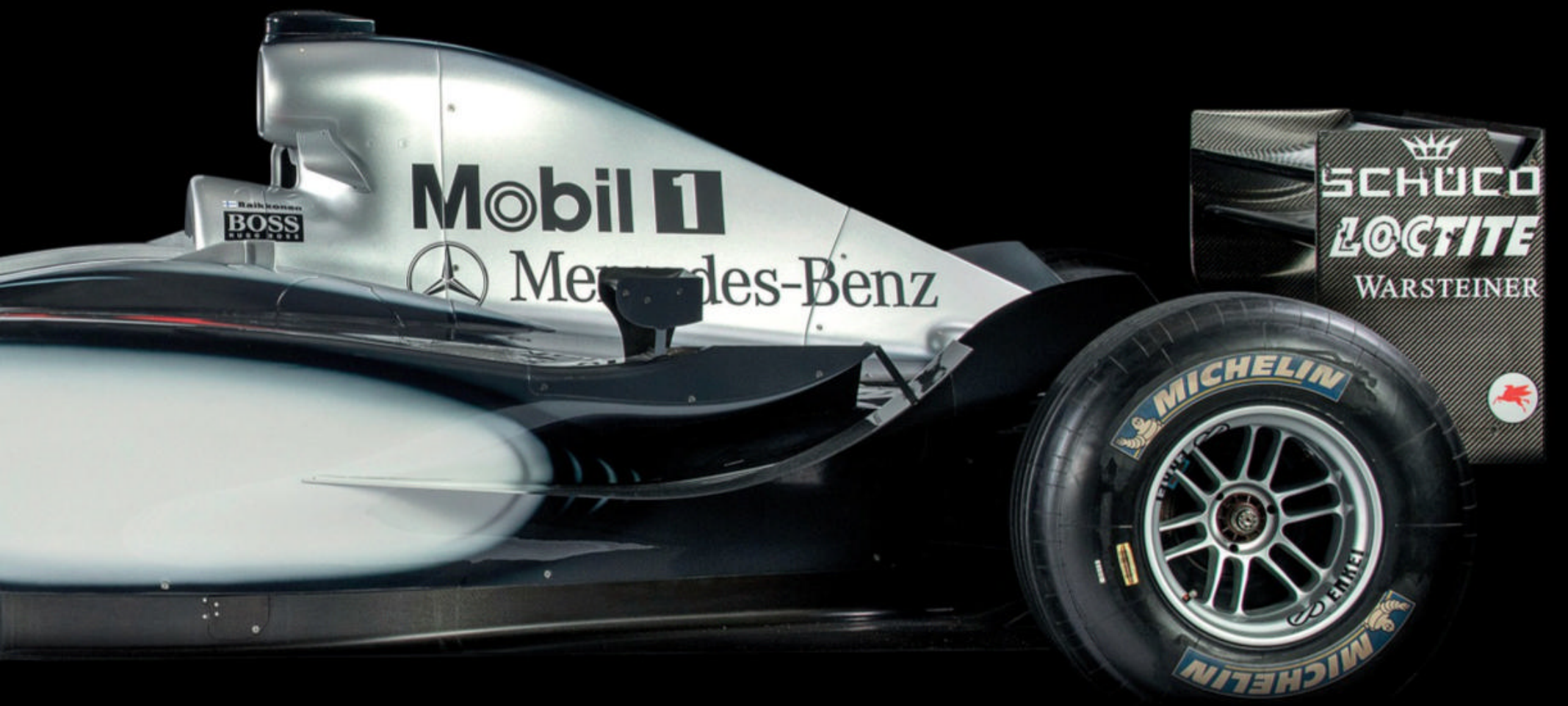
COULTHARD'S VICTORY IN MONACO WOULD BE THE HIGH POINT OF AN OTHERWISE BRUISING SEASON

McLAREN MP4-17

NOW THAT WAS A CAR

No117





McLAREN MP4-17

NOW THAT WAS A CAR

No117

be more tightly packaged all round than the MP4-17, feature a new and much narrower nose, a lower and lighter chassis, and a new gearbox with a carbonfibre casing. With a view to introducing the new car for the European season, McLaren also evolved the MP4-17 into a D-spec with revised aerodynamics, new suspension geometry front and rear, and a new gearbox.

In testing, though, the MP4-18's performance didn't reflect the numbers coming out of the windtunnel. The intricacy of its packaging made it hard for the mechanics to work on, it suffered a number of small fires caused by overheating, drivers complained of instability, and there was word, too – never officially confirmed – that it had failed at least one pre-season crash test. As a result its introduction was postponed time and time again, even after Newey and aero chief Peter Prodromou traced the cause of the instability to a disruptive interaction between the front of the chassis, sidepods and bargeboards.

Opinions differed as to the way forward. In his book, Newey states his belief that a new monocoque design was the only rigorous solution, but that he was outvoted by a 'faction' including Pat Fry and Paddy Lowe who believed other means of development would render the car competitive. This was probably the tipping point for Newey, who would leave two years later; he claims vindication in the form of the MP4-18 (rebadged as the 19 to spare the engineers' blushes) performing badly in the first half of the 2004 season until he belatedly got the go-ahead to change the monocoque.

Thus the MP4-17D flew the flag for Woking throughout 2003 and, initially, the decision to persist seemed correct. Coulthard won in Australia and was in with a shot at victory in Malaysia until an electrical problem sidelined him. Räikkönen 'won' the Brazilian GP, only to be required to hand the trophy over to Giancarlo Fisichella two weeks later (see p62). However, as MP4-18 debugging diverted energy and resources and Ferrari's new F2003-GA proved dominant from its introduction in Spain onwards, the MP4-17D slipped off the pace.

TEAM MANAGEMENT WOULD CONCEDE THE PROTRACTED NATURE OF THE MP4-18 PROJECT HAD ULTIMATELY PROVED TO BE A DISTRACTION

Engine reliability continued to be problematic; so too did the typically rancid state of F1 politics. The tyre war between Bridgestone and Michelin came to a head after Hungary, when the FIA announced it was to change the way it measured the width of the front tyres – giving Michelin three weeks to design and produce new ones. Ferrari, enjoying virtual exclusivity and a close partnership with Bridgestone, gained a clear advantage.

As a result, Räikkönen finished second in the drivers' championship, two points off Michael Schumacher. Coulthard's less impressive tally meant McLaren finished third again in the constructors' standings, two points behind Williams. Team management would concede the protracted nature of the MP4-18 project had ultimately proved to be a distraction.

"By Canada it was clear we needed to apply more energy to the MP4-17D to maintain its championship assault," said chief operating officer Martin Whitmarsh. "All the work done to it wasn't actually designed to help us close on the leaders. It was intended to help us keep up and not drop back further down the grid."

Perhaps the denizens of the matrix management ecosystem should have swallowed Newey's red pill in the first place...

RACE RECORD

Starts 66
Wins 3
Poles 2
Fastest laps 5
Podiums 20
Championship points 207

SPECIFICATION

Chassis Carbonfibre monocoque
Suspension Double wishbones with pushrod-actuated inboard torsion bars
Engine Naturally aspirated Mercedes FO 110M/FO 110P V10
Engine capacity 2998cc
Power 850bhp @ 18500 rpm
Gearbox Seven-speed semi-automatic
Brakes Carbon discs front and rear
Tyres Michelin
Weight 600kg
Notable drivers Kimi Räikkönen, David Coulthard

MAURICE HAMILTON'S ALTERNATIVE VIEW

While professional drivers might have to put up with a sub-standard grand prix car for months, other racing folk only have to endure a woeful hire car for a grand prix weekend... and they often come away with stories to tell...

PICTURES motorsport IMAGES

LEWIS HAMILTON, LANDO NORRIS and the rest don't need to tell me about the sinking feeling that comes with discovering you're lumbered with a dog of a car. I've been there more than once when driving a hire car out of an airport parking lot.

With deadlines beckoning and press conferences to attend at the track, there's no time to go back to the rental desk and complain. Coping with a juddering clutch or spongy brakes for the rest of a weekend may be a minor inconvenience compared to struggling with a fundamentally flawed Formula 1 car for nine months, but the feeling of helplessness must be, in my myopic view, very similar.

Ask any F1 journalist about rental car shortcomings and you'll be detained for as long as it takes any politically aware F1 driver to seriously tell you that being half a second off the pace is a positive experience because they think they've discovered what the problem actually is, and the team will pull as one and not hang the blame for such a crap car on anyone in particular.

I've got to admit to getting off lightly despite having rented hundreds of cars – assuming, of course, I actually got my hands on one in the first place. Rental companies often appear to be caught by surprise when the local staging of a GP brings an influx of customers on a Thursday morning and the rental fleet has already been ravaged by an equal number of F1 clients the day before.

Don't expect an advanced booking to be the passport to a motor with your name on it. When confronted by the necessary paperwork, the hire car clerk at São Paulo's Guarulhos airport in 2008 shrugged his shoulders and said, without a hint of remorse, "No possible." "But," I spluttered, "I have a reservation; here is the confirmation." "Yes – but I 'ave no cars." Tricky one, that. I can't remember the solution, but my newspaper cuttings indicate that I somehow scrounged a lift to the hotel and the racetrack.

And don't think everything is rosy when presented with the cheery news that the car is brand new and you're the first to hire it. Sure enough, the gleaming Fiat Punto at Bologna airport in 1998 had 17 kms on the clock. But what it didn't have was an anchor for the front-passenger seat belt. It wasn't broken. It simply wasn't there. This resulted in me appearing to be a chauffeur all weekend for my chortling colleague taking the piss as he rode imperiously in the back.

I'm sure hire car companies can reverse the role and tell tales of F1 people returning heaps of wreckage that bear little resemblance to the half-decent vehicles that had left the airport a few days before. Highway lawlessness isn't confined to media members over-enthused

EACH TIME THEY STOPPED AT THE SUCCESSION OF TRAFFIC LIGHTS ON THE ROAD OUT OF TOWN, DENNIS WOULD TAIL-END PROST'S CAR

Hire car issues weren't always restricted to the media. Jody Scheckter had to change a wheel on his rental in the paddock for the 1976 Belgian GP, a race he finished fourth in for Tyrrell

by what they'd witnessed on the racetrack.

In 1985, the McLaren team management had chosen a mountain lodge as a retreat between the Canadian and Detroit GPs. Leaving Montréal on the Monday morning, Alain Prost was sharing a hire car with good friend, Jacques Laffite. Ron Dennis was following in a similar car. Each time they stopped at the succession of traffic lights on the road out of town, Dennis would tail-end Prost's car. After several nerfs from behind, the Frenchmen decided enough was enough. At the next set of lights, they sprang from their car and jumped onto the bonnet of Dennis's vehicle before leaping onto the roof. This bumping and jumping continued until they reached their destination – by which time there was scarcely an undamaged panel on either car.

When they returned to the rental depot, Dennis got there first and blamed the destruction on the sudden appearance of a moose. Alain, thinking quickly, said the hapless moose had been flung over the top of Ron's car and accounted for the ravaged vehicle he was now returning. The rental company representative, seemingly familiar with such random forces of nature in the Lawrentian Mountains, simply shrugged and said: "These things happen." Some things, however, cannot be attributed to what might charitably be described as an unfortunate set of circumstances.

August 'Augie' Pabst, an American sportscar champion, was staying in Monterey's Mark Thomas Inn while racing at Laguna Seca. Being the last race of the 1961 USAC season, the mood was relaxed enough to have fellow competitors, Roger Penske and Peter Ryan, bet Pabst wouldn't drive his Hertz hire car into the swimming pool and discover how long the headlights would remain on while under water. When the stakes reached $100 (approximately $1000 at today's values), the bold Augie shifted pool furniture to one side, got behind the wheel and took a run at the deep end. Having closed all windows and vents, Pabst discovered that the Ford Falcon not only stayed afloat for a while but also drifted towards the side, allowing him to climb through a window and step nonchalantly ashore as if this was his normal method of arrival.

The people from Hertz were not amused. The Falcon, scarcely a compact saloon, would take some shifting from its final resting place on the pool floor. Then a switched-on marketing executive saw the value in having news networks film the complex recovery and help create the nifty slogan: 'We pick up your car any place, any time.' The hotel management also rediscovered their sense of humour. Twelve months later, the race teams arrived to find a 'No Parking' notice floating in the pool.

Struggling F1 drivers are rarely able to see the funny side. Their season turns out to be rather like the Ford Falcon's headlights which, in case you're interested, did no more than flicker forlornly for the rest of the evening.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SHOWCASE

THE RED BULL YEARS

From humble beginnings as Gerhard Berger's sponsor in 1989, Red Bull has morphed into one of Formula 1's pre-eminent team owners and has won the odd gong or two along the way...

Red Bull first entered Formula 1 as a constructor in 2005, having bought Jaguar Racing, and in 2022 claimed its sixth drivers' championship and fifth constructors' crown. In Bahrain Max Verstappen started 2023 as he finished 2022: winning F1 races

Red Bull has always embraced a bit of silliness with its drivers. Caravan racing in 2017 immediately springs to mind but a year earlier it got Max Verstappen and Daniel Ricciardo to walk around in lederhosen at the Red Bull Ring. There were also lederhosen-themed overalls...

Red Bull's Energy Station 'motorhome' first appeared at the 2005 San Marino GP, but for Monaco a floating version was developed over the years with, naturally, a pool. It became the place to celebrate, including Daniel Ricciardo's swan dive after winning the 2018 race

Having previously sponsored individual drivers, starting with Gerhard Berger in 1989, Red Bull stepped up its branding presence in Formula 1 in 1995 by becoming a major sponsor of Sauber. The relationship continued until the end of 2004

Red Bull bought Jaguar Racing at the end of 2004 and so entered the world of F1 constructors in 2005. Its first race was Australia and at the Melbourne launch party Vitantonio Luizzi (left) and Christian Klein helped pop icon Pink out of the RB1 ahead of her performance

After four consecutive title doubles from 2010 to 2013, Red Bull started the hybrid engine era badly by its high standards. Four-time champ Sebastian Vettel didn't win a race in 2014, and the team's three victories came from new boy Daniel Ricciardo, the last of these at Spa. The Aussie also outscored Vettel by 77 points in the driver standings

Up until 2022 Red Bull's most dominant year was 2013, thanks to Sebastian Vettel. After a slowish start to the season – Vettel was less than a race win ahead of Fernando Alonso after nine races – Seb hit the afterburners. This win at the US GP set a record of eight consecutive victories in a season and he added a ninth for good measure in Brazil

David Coulthard joined Red Bull for the team's F1 debut in 2005 and spent four seasons with the team, announcing at the 2008 British GP that he would retire at the end of the season. For his final race in Brazil his RB4 had a special 'Wings for Life' livery to raise awareness for spinal injuries, but DC retired on the first lap after contact

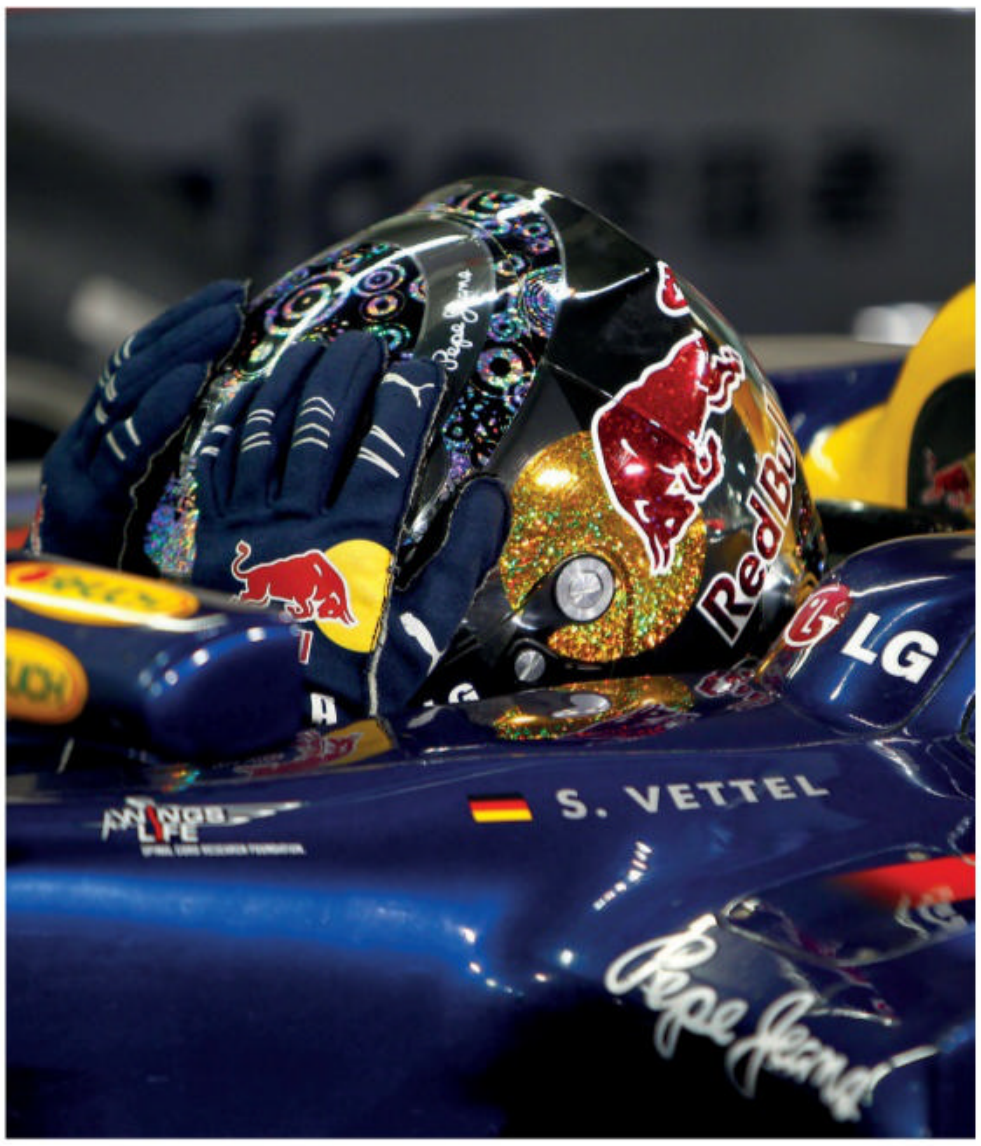
2021 was probably one of Red Bull's hardest-fought successes when Max Verstappen had a season-long battle with Mercedes driver Lewis Hamilton for the drivers' title Max came out on top (literally here at the Italian GP) bringing Red Bull a first title of any sort since 2013

After a few near misses in its debut season of 2005, Red Bull finally claimed its first F1 podium in 2006, at the Monaco GP. David Coulthard qualified his Ferrari-engined RB2 seventh and went on to finish a distant third. The team was promoting the film Superman Returns *at the race, hence Coulthard's caped attire*

Kenny Handkammer started in F1 in 1989 with Benetton and by 2010 had risen to become chief mechanic at Red Bull. Handkammer was an early recruit to the team, joining from Renault in 2006, and took this opportunity to pose with the two RB6s in Brazil in 2010 after Red Bull had claimed its first constructors' title

Although you can't see his face, there's a lot of emotion welling out of Daniel Ricciardo as he celebrates victory in the 2018 Monaco GP. This win made up a little for being robbed of a near-certain win two years earlier when, after leading comfortably from pole, the team bungled his pitstop for slicks, allowing Lewis Hamilton into the lead

2022 didn't start well for reigning champion Max Verstappen. He failed to score points in the season-opener in Bahrain and, although he won in Saudi Arabia, this retirement in Australia left him 46 points adrift of Ferrari's Charles Leclerc. Team and driver recovered superbly, however, claiming a first title double since 2013



After 15 of 19 GPs in 2010 Sebastian Vettel had only won twice but was still a huge contender in the title race, with Red Bull team-mate Mark Webber at the head of the standings. Vettel then proceeded to win three of the last four races, taking the lead in the championship for the first time when he crossed the line in Abu Dhabi...

Seb Vettel had already won for Red Bull's sister team Toro Rosso when he was promoted to the Red Bull ranks for 2009. In his first race for the 'parent' team, the Australian GP, he tangled with Sauber's Robert Kubica when lying second. Both retired from the race and Vettel was handed at 10-place grid penalty for the next GP

Red Bull GmbH co-founder Dietrich Mateschitz (left, with team principal Tony Purnell) was the driving force behind the company buying Jaguar Racing, so it was only natural that he would be at Barcelona in November 2004 for the team's first test in Red Bull colours. Mateschitz passed away in October of last year

Mercedes team principal Toto Wolff (left) and his Red Bull counterpart Christian Horner 'made up' ahead of the final race of the acrimonious 2021 season. Horner joined Red Bull at its inception in 2005, aged only 31, and is now F1's current longest-serving team principal

It was controversial and is still talked about even now, but for Max Verstappen and Red Bull the 2021 Abu Dhabi GP will always be a source of joy. Just when it seemed the title was lost a late-race Safety Car intervened, and Verstappen took full advantage to claim his first world championship crown

It didn't seem to matter what grid position Max Verstappen started from in 2022 as the result seemed to be the same: a win. In Hungary he won from 10th and in Italy was victorious from seventh, but Max took this to the extreme in Belgium where he triumphed from 14th, taking the lead as early as lap 12

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RACE DEBRIEF

F1 WORLD CHAMPIONSHIP ROUND 2

THE SAUDI ARABIAN GP IN 5 KEY MOMENTS

Pérez converted his second career pole position into a win, but the Mexican was unhappy at being denied the fastest lap by Verstappen

Verstappen (with team boss Horner, left) ahead of the race. Max was forced to start from a lowly 15th after a driveshaft issue in qualifying

Pérez pulled out a five-second lead after the Safety Car period. That, and his response to Max's fastest laps, ensured victory for Checo

PICTURES: ZAK MAUGER; SAM BLOXHAM; MARK SUTTON

1 Pérez wins after Verstappen's qualifying disaster

Max Verstappen's driveshaft failed during his first run in Q2, leaving the reigning champion 15th on the grid, and Sergio Pérez used the RB19's speed advantage over the opposition to take pole and then win the race. But as easy as that sounds, few would dispute that Checo had to earn that victory – all thanks to his second stint, during which he kept Verstappen at bay without giving his team-mate a single reason to think about making an attack. The Red Bull pair were 5.4 seconds apart by the time Verstappen moved into second place on lap 25 – and, after a further 25 laps, Checo crossed the line 5.3 seconds ahead of Max to claim his fourth win for the Milton Keynes-based outfit, yet again – like the previous three – on a street circuit.

Saturday's pole was only the second of Pérez's career – the first was a year ago at the same venue in Jeddah, when he emerged on top in a head-to-head battle with his team-mate and the two Ferrari drivers. This time it was a simpler affair: Verstappen dominated all three practice sessions but, after Max had a driveshaft break at the start of Q2, Pérez needed only to capitalize on Red Bull's supremacy to beat the Aston Martin and Mercedes drivers, as well as Carlos Sainz. Charles Leclerc was second fastest in Q3 but it was known, even before the weekend started, that he would receive a 10-place grid penalty owing to a change of control electronics on his power unit.

Verstappen ended up 15th on the grid but, as Christian Horner pointed out after the race, he had been somewhat fortunate: had Max's driveshaft survived a little longer on Saturday, the failure would have occurred in the opening laps of the race. Even starting from the eighth row of the grid, Max was widely regarded as one of the main favourites for victory. After all, it took him just 18 laps to take the lead from 14th on the grid at Spa last year. And Red Bull's advantage has only grown since then.

"I think there is no doubt that he will be on the podium," Fernando Alonso smiled on Saturday night.

It took Max 16 laps to get to fourth place this time. He probably could have done better, but he chose to err on the side of caution. Verstappen overtook the lot without taking the slightest risk and then got a bit of luck with the Safety Car. In hindsight Lance Stroll stopped his Aston Martin in a reasonably safe place (with an "energy recovery issue"), but race control later explained that the initial camera angles available left room for doubt over the exact location of the stranded car. Max

was able to make a 'cheap' pitstop and remained in fourth for the restart.

Up to that point, Pérez had made good use of the advantage he had been gifted in qualifying. After relinquishing the lead to Alonso on the way to the first corner, Checo overtook him a few laps later and built up a gap of more than five seconds. But Lance's retirement forced Pérez to start all over again – and, to his credit, he coped brilliantly.

It took Max just five laps from the restart to overtake Alonso and George Russell, again without taking any risks. Pérez made the most of it, creating a five-second cushion, but Max was expected – perhaps by the vast majority of observers – to eradicate it effortlessly.

He didn't, though. For every fast lap Max put in, Sergio responded with an equally fast one – and the gap barely shrank. Verstappen – either genuinely sensing a problem or subconsciously trying to find an explanation for why he couldn't catch his team-mate – told the team that his car was making "a weird noise", suspecting another driveshaft issue. He eventually slowed down, resigned to the fact he wouldn't be able to catch Pérez this time.

He did, however, manage to pick up a point for fastest lap, stealing it from Checo on the very last lap, something that surprised the Mexican a little after the finish. "They told me I had the fastest lap and to keep a certain pace, so I thought the communication was the same to Max," said Pérez.

He also alluded to the need to "review" something with the team – which, combined with this victory, confirmed his intention to prevent Max's quest for a third title becoming a formality.

2 Alonso clinches 100th podium... twice

Fernando Alonso has provided further confirmation that his move to Aston Martin has been one of the best decisions of his 20-year-plus Formula 1 career. A second consecutive podium for the 41-year-old Spaniard proved Aston Martin is Red Bull's closest challenger at the start of the season.

After Bahrain there were still question marks over Aston Martin's pace, particularly in qualifying. However, if on Saturday in Bahrain Fernando was beaten not only by the Red Bull drivers but also by both Ferraris, then in Saudi Arabia he secured a front-row spot – albeit not without help from his rivals in the form of Verstappen's driveshaft failure and Leclerc's penalty.

On Sunday, however, the Aston Martin was the second-fastest car with no asterisks. Yet Fernando made life a little more difficult for himself by picking up a penalty for a minor infraction during the start procedure. Alonso failed to place his AMR23 in the painted bracket on the grid and was given a five-second penalty, which somewhat spoiled the excitement over him leading the race. Fernando had managed to squeeze past Pérez into Turn 1, but there was little chance of him winning – and not just because of the penalty. Sergio quickly regained the lead, passing Alonso a few laps later on the main straight and then opening up a good gap.

Alonso, for his part, did everything in his power to make up for his mistake at the start, pulling away from Russell to remain in second place once the penalty was served during his pitstop. He then proceeded to finish third after Verstappen also passed him on lap 25. It was the stop itself, however, that came under the spotlight after the finish, when the FIA contrived to conjure a brouhaha out of absolutely nothing.

It took the stewards about 30 laps to address the team's handling of the penalty. It emerged that the rear jack had touched Alonso's car during those five penalty seconds in which the mechanics were supposedly forbidden to do so, incurring a further 10-second penalty. Strangely enough, this was awarded almost immediately after the finish. Fernando himself was informed as soon as he came off the podium, where he had collected the third-place trophy. The penalty dropped him to fourth. But that wasn't the end of the story, as Aston managed to change the stewards' minds later that evening.

Alonso's return to the podium was aided by the vague wording of paragraph 54.4 (c) of the sporting regulations, which prohibits teams from 'working' on the car while serving a penalty. But not only did Aston Martin make the stewards consider whether 'touching' automatically meant 'working', it also pointed out seven separate cases when some form of 'touching' had taken place in similar circumstances and not resulted in a penalty.

At the end of this vaudeville, all that was left

Alonso's second podium in two races was a cause for celebration, which Fernando got to do again after the post-race shenanigans

to do for the stewards was to agree and give Alonso his podium back, the 100th of his career and surely one of the sweetest as well. Fernando got to celebrate twice, and managed to skip the official press conference for the top three – Russell, who finished fourth on the road, was the unwitting stand-in owing to the timing of the penalty.

3 Ferrari has a sobering Sunday

After a tumultuous winter, which included a change of team principal, Ferrari started the new season as if it was trying to convince everyone that, despite finishing second in the 2022 constructors' championship with its best result for many years, changes were still definitely needed.

The power unit failure in Bahrain not only cost Charles Leclerc a possible podium finish (although it is doubtful he would have been able to withstand Fernando Alonso's late onslaught), it also derailed his weekend in Jeddah. It's extraordinary but true – Ferrari, having spent the winter supposedly trying to improve the reliability of its power unit, was penalised for going above the season limit with one of the components before the start of the second grand prix of the season, as Charles received his third set of control electronics. The first had been replaced before the Bahrain race owing to an "anomaly" discovered by the team's engineers, and the second failed on lap 41 of the race itself.

If you had any doubts Frédéric Vasseur had a tough job ahead of him, you now know for sure. And reliability concerns or strategy hiccups may not be the biggest issues. On Sunday in Saudi Arabia, the Ferrari was the fourth-fastest car, not only behind Red Bull and Aston Martin, but also Mercedes. Once again this was largely a consequence of tyre wear, although the Jeddah circuit is much more forgiving than Bahrain.

Leclerc had produced a stunning lap in qualifying, but was then demoted to 12th on the grid thanks to the penalty, and only managed to recover to seventh in the race. Carlos Sainz – who, it must be noted, was unlucky with the Safety Car timing – finished sixth, four seconds behind Lewis Hamilton.

"Right now, we're not where we want to be in terms of race pace," said Carlos. "We just struggled a bit, and if we already overheat the tyres in clean air then imagine following, we just eat them alive."

4 Magnussen brings Haas its first point

A year ago, Kevin Magnussen's ninth place at Jeddah was something of a comedown – on the back of a fifth-place finish in Bahrain. A top-ten finish in the 2023 Saudi Arabian Grand Prix, though, was a success. The race in Sakhir two weeks earlier had left Haas with plenty of reasons to worry: while the VF-23 was quite good over one lap, there were concerns over long-run pace. But the race at Jeddah proved Haas is definitely competitive.

Nico Hülkenberg was just 0.04s shy of making it into Q3, but still beat Magnussen in qualifying for the second time in a row. Kevin, however, insisted he'd had a good chance of making it to Q3 – but gearbox and braking issues got in the way.

After starting from 10th and 13th (Hülkenberg inherited one place thanks to Leclerc's penalty) they briefly battled each other in the race, and Magnussen came out on top, then proceeded to bring his team its first point this year.

It had to be earned, though. Kevin fought for 10th for over 20 laps with Yuki Tsunoda and only passed

Leclerc was superb in qualifying but started only 12th due to his Bahrain engine failure. He only recovered to seventh, just behind Sainz

PICTURES: STEVEN TEE; GLENN DUNBAR; MARK SUTTON

Magnussen leads Hülkenberg before going on to score Haas' first point of 2023

the AlphaTauri at the third attempt – outbraking Tsunoda at the first corner after a drag race on the main straight set up by a final-corner attack.

"He did a good job, I have to say, not only in just defending but also always positioning the car," Magnussen said after the race. "Where I needed the downforce he was going wide in places he didn't need to [but] where I was going to find clean air and stuff. I was always very close to him into the last corner, but he was getting super-good exits, so I couldn't get him into Turn 1. And if you overtake him in the last corner, then he has the DRS for the main straight... So, after trying two times I decided to go for it in the last corner. I knew he would come back with DRS, but I managed to get past."

5 Alarm bells at McLaren

A failure to score points in Jeddah means McLaren has now had its worst start to a season since 2017, when the team was using Honda engines.

After a troubled start to 2023 in Bahrain, McLaren again was unable to properly assess its performance shortcomings in Saudi Arabia. There is no doubt the team has failed to produce a fast car, but even two GPs weren't enough to really judge where it lies in the pecking order. After reliability problems in Bahrain, it was the turn of driver errors and plain bad luck in Jeddah.

In Q1, Lando Norris made an uncharacteristic mistake, scraping the wall in the final corner – enough to damage his suspension and condemn him to the back of the grid. Oscar Piastri's entry into Q3 was the highlight of the weekend but, right at the start, the Australian collided with Pierre Gasly, and this small contact broke the McLaren's front wing. Unfortunately, the largest piece of debris from Piastri's MCL60 then flew into the path of Norris's sister car, forcing both drivers to make unscheduled pitstops.

If there was anything to be learned about the speed of the McLaren car during the weekend in Jeddah, it was that it wasn't fast enough to allow the drivers to make it through the field after they dropped to the last two places.

Both McLaren were forced into unscheduled early stops following Piastri's first-lap clash

RESULTS ROUND 2

JEDDAH CORNICHE / 19.03.23 / 50 LAPS

1st	**Sergio Pérez** Red Bull	1h21m14.894s
2nd	**Max Verstappen** Red Bull	+5.355s
3rd	**Fernando Alonso** Aston Martin	+20.728s
4th	**George Russell** Mercedes	+25.866s
5th	**Lewis Hamilton** Mercedes	+31.065s
6th	**Carlos Sainz** Ferrari	+35.876s
7th	**Charles Leclerc** Ferrari	+43.162s
8th	**Esteban Ocon** Alpine	+52.832s
9th	**Pierre Gasly** Alpine	+54.747s
10th	**Kevin Magnussen** Haas	+64.826s
11th	**Yuki Tsunoda** AlphaTauri	+67.494s
12th	**Nico Hülkenberg** Haas	+70.588s
13th	**Zhou Guanyu** Alfa Romeo	+76.060s
14th	**Nyck De Vries** AlphaTauri	+77.478s
15th	**Oscar Piastri** McLaren	+85.021s
16th	**Logan Sargeant** Williams	+86.293s
17th	**Lando Norris** McLaren	+86.445s
18th	**Valtteri Bottas** Alfa Romeo	+1 lap

Retirements

Alex Albon Williams	27 laps/brakes
Lance Stroll Aston Martin	16 laps/energy recovery

Fastest lap

Max Verstappen 1m31.906s on lap 50

TYRE COMPOUNDS USED

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

CLIMATE	AIR TEMP	TRACK TEMP
Dry/ night	28°C	31°C

DRIVERS' STANDINGS

1	Verstappen	44pts	11	Gasly	4pts
2	Pérez	43pts	12	Magnussen	1pt
3	Alonso	30pts	13	Albon	1pt
4	Sainz	20pts	14	Tsunoda	0pts
5	Hamilton	20pts	15	Hülkenberg	0pts
6	Russell	18pts	16	Sargeant	0pts
7	Stroll	8pts	17	Guanyu	0pts
8	Leclerc	6pts	18	De Vries	0pts
9	Bottas	4pts	19	Piastri	0pts
10	Ocon	4pts	20	Norris	0pts

motorsport STATS

FINISHING STRAIGHT

RACE DEBRIEF

F1 WORLD CHAMPIONSHIP ROUND 3

THE AUSTRALIAN GP IN 5 KEY MOMENTS

1 Verstappen prevails in chaotic race

A brief grassy moment for Max Verstappen during the closing stages proved to be one of the least significant incidents in an Australian Grand Prix which finished under Safety Car conditions after being interrupted by three red flags. Quite apart from the shunts which precipitated those interruptions, as Max began waving to the crowd after taking the chequered flag, he found several members of the audience rather closer than expected and on the wrong side of the barriers – but we'll return to that subject later.

Apart from a brief moment of vulnerability at the first start, this grand prix was another graphic demonstration of the superiority of Red Bull's RB19. Polesitter Max was unusually cautious – some might even say passive – under braking for Turns 1 and 3, enabling the Mercedes duo of George Russell and Lewis Hamilton to assert themselves (while Verstappen noisily complained that Hamilton's move overstepped the mark of what was permissible, the stewards didn't agree). But once the race proper got under way – after the first red flag – Max blasted past Lewis as soon as DRS was available and was 2s ahead by the end of the lap. Later Max's team-mate Sergio Pérez breezed past Oscar Piastri with DRS – while the McLaren was also benefitting from DRS.

The first red flag cost Russell the lead at the end of lap seven when he (along with fourth placed Carlos Sainz) pitted after the Safety Car was deployed to cover the effects of Alex Albon's Williams snap-oversteering into the barrier at Turn 6. A lap later race control decided there was enough gravel and debris on track to render a complete stoppage prudent. Russell raged, but his race would end with an engine failure on lap 18 of the restarted race.

Hamilton led until Verstappen went by under DRS on lap 12, and from then on it was a case of managing tyres as Max crept well clear while nursing his hard-compound Pirellis. While both RB19s had been prone to front locking during the weekend, Pérez had had the worst of it, going off in qualifying and being forced to start from the pitlane; Verstappen would lose control just once, running onto the grass at the penultimate corner 10 laps from the end to avoid letting "a tiny lock-up" develop into a flat spot. This cost 3.3s but Hamilton's Mercedes was still a speck in the rear-view mirror, even though Lewis was pushing a little to keep third-placed Fernando Alonso's Aston Martin out of DRS range.

On lap 54 Kevin Magnussen tagged the wall at the exit of Turn 2, cracking a wheel rim and leaving carbon debris and most of his Haas's right-rear tyre in the road. This prompted race control to red-flag the race once more with just three laps to run.

While there were those (including Max) who argued the clear-up could have been managed under Safety Car conditions, the red flag meant

Although he spent the first 11 laps trailing a Mercedes driver, Verstappen delivered another example of Red Bull dominance

Verstappen lost out to Russell down to the first corner in the first start of the race, before dropping to third behind Hamilton exiting Turn 3

The Safety Car led the remaining cars out of the pits to complete the allotted 58 laps after the chaos of start number three

PICTURES: MARK SUTTON; LIONEL NG; SIMON GALLOWAY

a standing restart – which this time he managed almost perfectly, having completed an extra burnout on his run to the grid at the end of the formation lap. This left him well clear of the chaos which erupted in his wake at Turn 1 as Sainz went in too hot, tagging Alonso into a spin. Behind, Pierre Gasly also overcooked it and collected Alpine team-mate Esteban Ocon, bringing out the red flag again.

After a 35-minute delay, the race began again with a rolling restart behind the Safety Car, and with the cars in the order of the grid from the previous restart. While this caused Haas to chafe, it at least meant no more carbon fibre went flying...

2 Sainz speechless, Ferrari pointless

Another frustrating weekend for Ferrari culminated in Carlos Sainz declaring himself unable to talk in the post-race media pen, such was his ire at receiving a five-second penalty for his role in the messy second red-flag restart. Team-mate Charles Leclerc had long since concluded such formalities, since his race lasted just three corners.

Leclerc qualified seventh – behind both Mercedes and Aston Martins as well as Sainz – but came to grief at Turn 3 when he went for a gap which suddenly opened up as cars ahead braked early as a consequence of Lewis Hamilton closing the door on Max Verstappen. He got half way round the outside of Lance Stroll's Aston but Stroll was then squeezed between the Ferrari and his own team-mate; the resulting contact left Leclerc in the gravel and prompted a brief Safety Car outing.

"I'm obviously frustrated, it's the worst ever start of a season [for me]," said Leclerc, who has just six points to his name. "I'm not blaming it on Lance. I think it's a racing incident. But it's just very frustrating because the result is I'm going home with basically no points."

This left Sainz as Ferrari's sole hope of scoring points and the initial prospects were good as he reached fourth from fifth on the grid, usurping Fernando Alonso at the start. But he lost track position by pitting under the Safety Car which followed Alex Albon's crash, and the ensuing red flag cancelled any tactical advantage he might have gained as a result of the stop.

Low tyre temperatures contributed to Sainz's tangle with Alonso at the second restart, which led to a five-second penalty – one which had a disproportionately great effect because the race ended behind the Safety Car. So while he lined up fourth for the final restart, he was demoted to 12th.

"I think it's the most unfair penalty I've ever seen in my life," he said afterwards. "Before talking to you and saying any really bad stuff or bad words, I'd prefer to go back to the stewards, have a conversation with them and maybe I can come back and talk again."

Sainz was livid with the five-second penalty given by the stewards, which pushed him down from fourth at the last restart to 12th

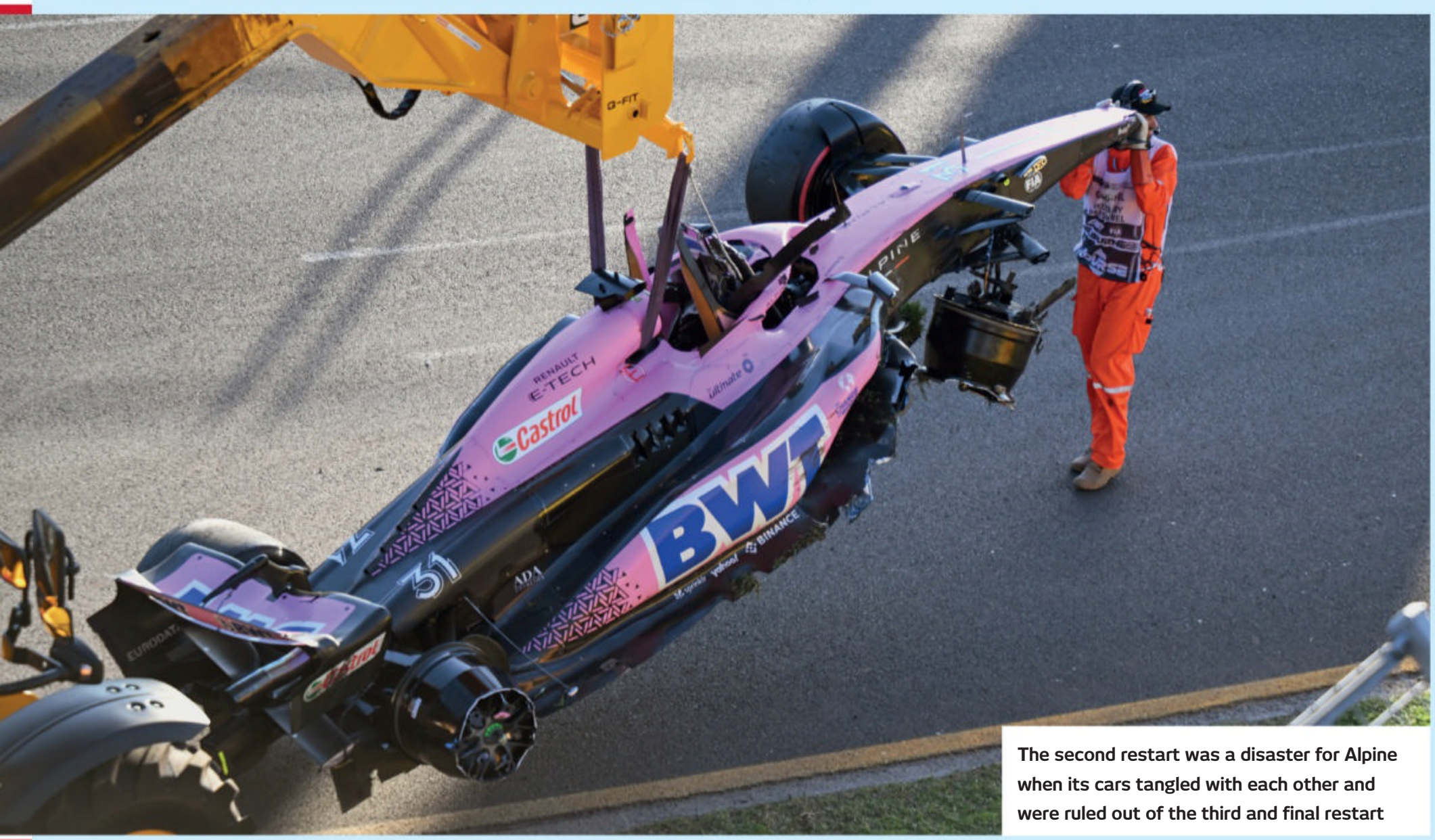
Even the injured party concurred.

"On lap one [at a restart], it's always very difficult to judge the grip level, and I think we don't go intentionally into another car, you know?" said Alonso. "It's just part of racing. I didn't see the replay, but for me it feels too hard."

Leclerc probably spent more time on a scooter than in his Ferrari on race day after Turn 3 contact with Stroll on the opening lap

RACE DEBRIEF

F1 WORLD CHAMPIONSHIP ROUND 3



The second restart was a disaster for Alpine when its cars tangled with each other and were ruled out of the third and final restart

3 Alpine's uptown flunk

Much ink has been spilled pre-season in speculating about the trajectory of the relationship between Alpine team-mates Pierre Gasly and Esteban Ocon, given previous bad blood between them. Having contrived to collide with each other at the penultimate restart in Melbourne, thereby kissing goodbye to a double points finish, the duo were surprisingly diplomatic.

It had been a generally positive weekend for the Anglo-French team up until that point, for Gasly had made it through to Q3 while Ocon only missed out by a fraction of a second. And, while Ocon was one of the group disadvantaged by stopping for tyres just before the first red flag, he'd fought his way back into the top 10 – indeed, his pass around the outside of Oscar Piastri at Turn 9 was one of the best-executed passes of the race.

They lined up fifth and 10th for the penultimate restart but Gasly locked up and went over the kerbs at Turn 1 as he tried to avoid Fernando Alonso's spinning Aston Martin. As he rejoined and tried to take up the racing line at the exit of Turn 2 he failed to observe his team-mate coming up fast around the outside. The tangle put them both in the wall and contributed to the final red flag.

Gasly was already on 10 penalty points and on the cusp of triggering a race ban, but the stewards determined it a racing incident. Equally importantly, perhaps, so too did Pierre's team-mate.

"A very chaotic restart then, honestly, it could have been any cars I collided with," said Ocon. "There were cars coming back on the track, obviously Pierre was one of them. But no hard feelings. He came and apologised and, as I said, it could have been anyone."

Since both cars were thoroughly smashed, they were unable to line up for the final restart and were classified as DNFs.

4 Haas protest rejected

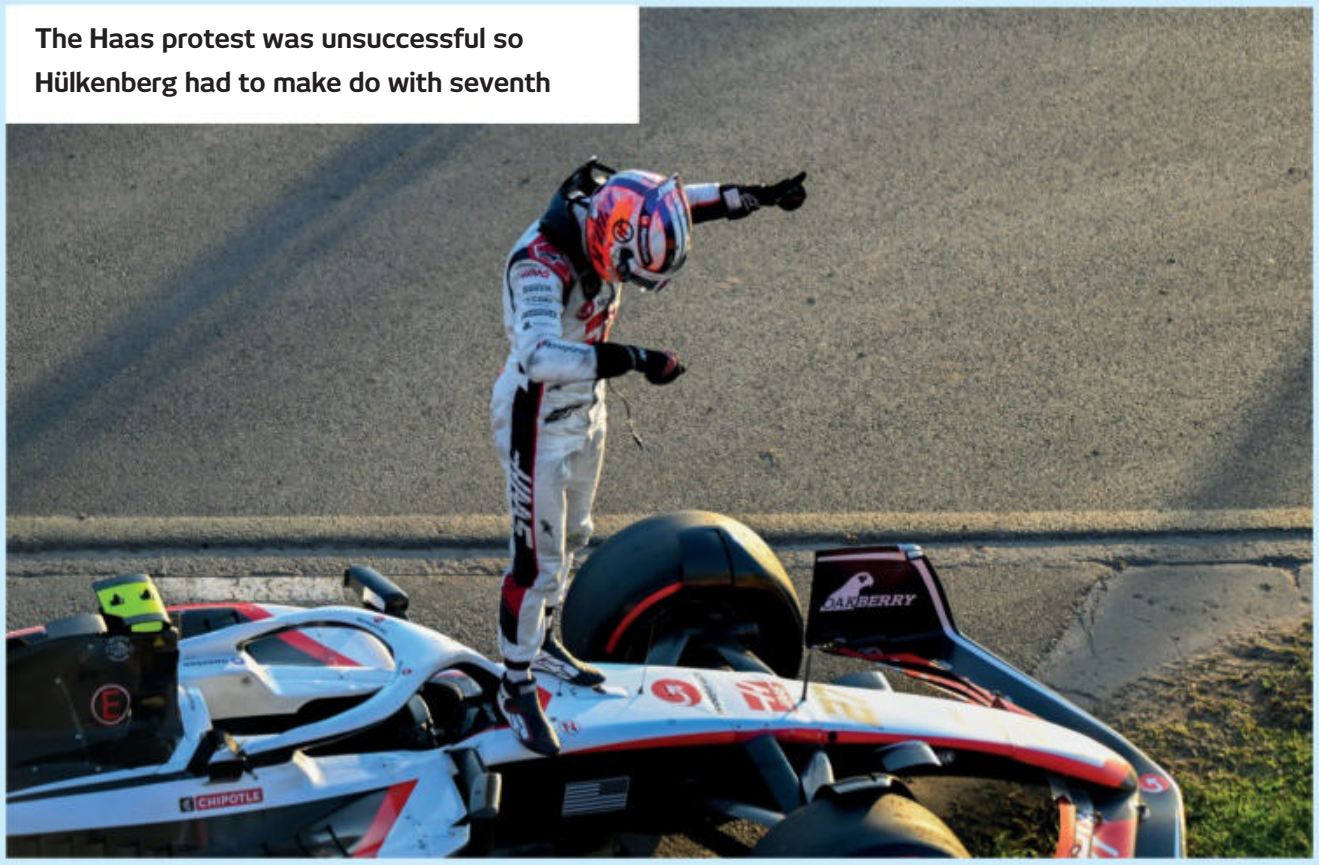
An obvious question to ponder, as the shadows lengthened in Albert Park late on Sunday afternoon, was the grid order for the final restart. This also exercised a number of competitors, most notably Haas, which lodged a protest swiftly after the chequered flag eventually flew.

Though the team didn't comment publicly on its reason for protesting, it would not require the deductive prowess of Sherlock Holmes to observe that Nico Hülkenberg briefly found himself running fourth on the road when the red flags were displayed in the aftermath of the penultimate restart. The FIA's decision to run the final restart according to the grid order of the penultimate one, rather than the actual running order at the point of stoppage, pushed Hülkenberg back to seventh. This was because Fernando Alonso, Lance Stroll and Sergio Pérez were able to reclaim their previous positions ahead of the Haas.

The reason for doing this is enshrined in the sporting regulations, where Article 57.3 states: "In all cases the order will be taken at the last point at which it was possible to determine the position of all cars. All such cars will then be permitted to resume the sprint session or the race."

As with last year's British GP, which was stopped on the opening lap, not all cars had completed a timing sector so there was no conclusive evidence of the running order. Haas contended it should have

PICTURES: SIMON GALLOWAY; LIONEL NG



The Haas protest was unsuccessful so Hülkenberg had to make do with seventh

been possible to establish a running order based on positions crossing Safety Car line 2, which is between the pit exit and Turn 1. This would likely have put Hülkenberg in sixth rather than seventh.

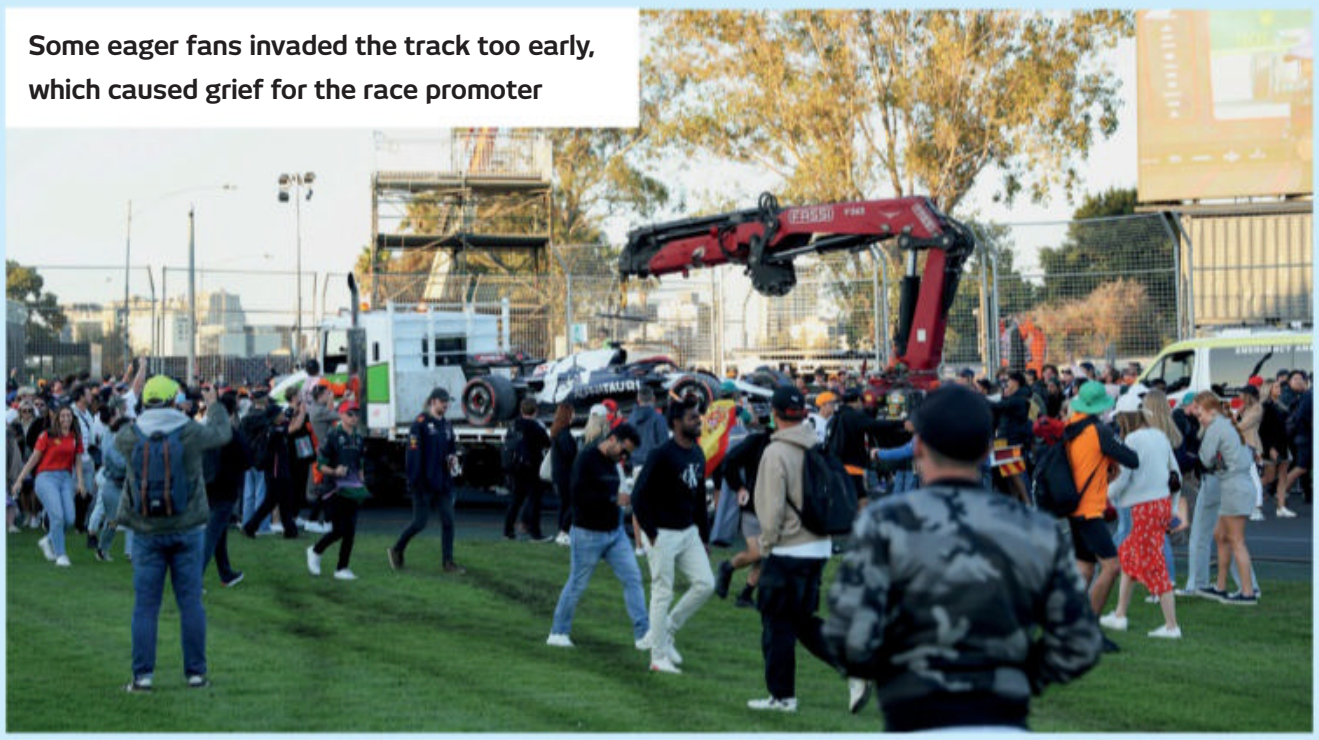
The stewards explained themselves thus: "This determination needed to be done in the context of a timed race event and therefore the decision of race control and the race director needed to be made promptly; with the exercise of appropriate discretion and by using the most appropriate information available to them at the time."

5 Promoters summoned to the stewards

In the context of F1 race promoters having to pursue policies of continuous improvement to justify their places on the calendar, perhaps the stewards' office at Albert Park should be fitted with a revolving door next year to help deal with the number of visitors. Sunday night in Melbourne was a particularly busy one for the officials, given the number of incidents during and immediately after the grand prix; even the race promoter was summoned to explain itself (via document number 50 in the FIA system, no less – the outcome was published five docs later, such was the volume of business).

Australian Grand Prix Corporation CEO Andrew Westacott had to account for what he called "an uncontrolled ingress of people and patrons" at Turn 1 at the end of the race. While fans are traditionally allowed on track in Melbourne after the race, here a number of people had jumped the gun and made it as far as the asphalt as the leaders were crossing the finishing line. Spectators were also able to reach Nico Hülkenberg's stranded Haas, which had a flashing red light indicating it was unsafe owing to potential electric discharge.

The AGPC "candidly admitted the failures" and undertook to "conduct a thorough investigation and take steps to remediate in time for the next event in Australia." In a separate incident, a spectator suffered lacerations after being hit by debris from Kevin Magnussen's Haas.



Some eager fans invaded the track too early, which caused grief for the race promoter

RESULTS ROUND 3

ALBERT PARK / 02.04.23 / 58 LAPS

1st	**Max Verstappen** Red Bull	2h32m38.371s
2nd	**Lewis Hamilton** Mercedes	+0.179s
3rd	**Fernando Alonso** Aston Martin	+0.769s
4th	**Lance Stroll** Aston Martin	+3.082s
5th	**Sergio Pérez** Red Bull	+3.320s
6th	**Lando Norris** McLaren	+3.701s
7th	**Nico Hülkenberg** Haas	+4.939s
8th	**Oscar Piastri** McLaren	+5.382s
9th	**Zhou Guanyu** Alfa Romeo	+5.713s
10th	**Yuki Tsunoda** AlphaTauri	+6.052s
11th	**Valtteri Bottas** Alfa Romeo	+6.513s
12th	**Carlos Sainz** Ferrari	+6.594s*
13th	**Pierre Gasly** Alpine	56 laps - accident
14th	**Esteban Ocon** Alpine	56 laps - accident
15th	**Nyck De Vries** AlphaTauri	56 laps - accident
16th	**Logan Sargeant** Williams	56 laps - accident
17th	**Kevin Magnussen** Haas	52 laps - damage

*includes 5s penalty for causing a collision

Retirements

George Russell Mercedes	17 laps/power unit
Alex Albon Williams	6 laps/spin
Charles Leclerc Ferrari	0 laps/collision

Fastest lap

Sergio Pérez 1m20.235s on lap 53

TYRE COMPOUNDS USED

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

CLIMATE	AIR TEMP	TRACK TEMP
Sunny	20°C	35°C

DRIVERS' STANDINGS

1 Verstappen	69pts	11 Bottas	4pts
2 Pérez	54pts	12 Ocon	4pts
3 Alonso	45pts	13 Piastri	4pts
4 Hamilton	38pts	14 Gasly	4pts
5 Sainz	20pts	15 Guanyu	2pts
6 Stroll	20pts	16 Tsunoda	1pts
7 Russell	18pts	17 Magnussen	1pt
8 Norris	8pts	18 Albon	1pt
9 Hülkenberg	6pts	19 Sargeant	0pts
10 Leclerc	6pts	20 De Vries	0pts

motorsport STATS

FINISHING STRAIGHT

RACE PREVIEW

F1 WORLD CHAMPIONSHIP ROUND 4

AZERBAIJAN GP

28-30 April 2023
Baku City Circuit

PICTURE: GLENN DUNBAR. ILLUSTRATION: ALAN ELDRIDGE

THE MAIN EVENT

"The speed is higher in the land of fire" goes the Azerbaijan race promoter's tagline, an apt way of encapsulating this unique track's unusual blend of stop-start threading through the city followed by a flat-out 220mph blast along the main 'straight' with the Caspian Sea as the backdrop. This mash-up of Monaco and Monza is technically demanding because of these enormous contrasts.

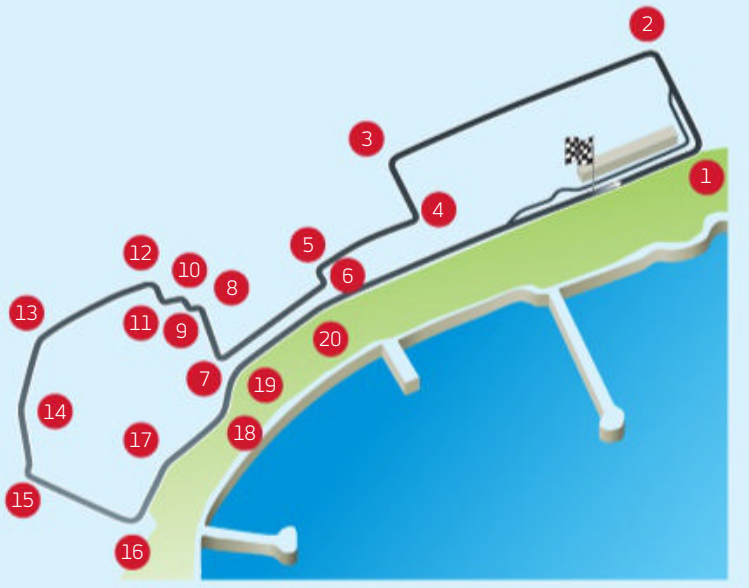
Azerbaijan is also the land of ire, for this race has provoked some remarkable confrontations, including Sebastian Vettel's bout of road rage with Lewis Hamilton behind the Safety Car in 2017 and the contretemps between team-mates Daniel Ricciardo and Max Verstappen a year later. Red Bull's handling of what Ricciardo described as "a shitshow" was what prompted him to leave.

2022 RACE RECAP

Ferrari's Charles Leclerc was already on the back foot in the championship, having slipped behind Red Bull's Max Verstappen two rounds earlier, but Azerbaijan delivered the biggest blow yet to his title hopes. Leclerc claimed pole in a qualifying session delayed by barrier repairs after an F2 crash, plus a red flag caused by Lance Stroll shunting his Aston in Q1. But within seconds of the lights going out he lost a place to Verstappen's team-mate Sergio Pérez.

Neither Ferrari finished the race as Carlos Sainz halted with a hydraulics issue, while Leclerc stopped with smoke billowing from his engine four laps after seizing the lead from Pérez. That left Verstappen to lead a Red Bull 1-2 finish with George Russell a distant third for Mercedes.

KEY CORNER: TURN 8 The transition from new town to old town is a tricky one for the drivers. This sharp left turn, leading to a narrow uphill section, is easy to get wrong, resulting in a race or qualifying-ending date with the barrier.



RACE DATA

Circuit Baku City Circuit
First GP 2016
Number of laps 51
Circuit length 3.730 miles
Race distance 190.169 miles
Lap record 1m43.009s
Charles Leclerc (2019)
F1 races held 6
Winners from pole 2
Pirelli compounds C3, C4, C5

CAR PERFORMANCE

Downforce level Low
Cooling requirement Medium
Full throttle 61%
Top speed 220mph
Average speed 130mph

TIMETABLE (UK TIME)

Friday 28 April
Practice 1 10:30-11:30
Qualifying 14:00-15:00
Saturday 29 April
Practice 2 10:30-11:30
Sprint 14:30-15:30
Sunday 30 April
Race 12:00
Live coverage Sky Sports F1
Highlights Channel 4

THE PAST FIVE WINNERS HERE

2022	2021	2019	2018	2017
Max Verstappen Red Bull	Sergio Pérez Red Bull	Valtteri Bottas Mercedes	Lewis Hamilton Mercedes	Daniel Ricciardo Red Bull

FINISHING STRAIGHT

RACE PREVIEW

F1 WORLD CHAMPIONSHIP ROUND 5

MIAMI GP

5-7 May 2023
Miami International Autodrome

PICTURE: MARK SUTTON. ILLUSTRATION: ALAN ELDRIDGE

THE MAIN EVENT

Formula 1's first visit to Florida since Sebring hosted the 1959 season-closer made for an intriguing weekend. Commercially this is the motherlode for F1's rights holder: a high-profile partnership with the owner of the Miami Dolphins American football team and a hospitality-friendly trackside setup with high-rolling VIP areas. Interest remains high in the US thanks to the much-vaunted 'Netflix effect'.

While first impressions of the track, laid out by Apex Circuit Design and not Hermann Tilke, were good, a few teething troubles arose with some barriers being less substantial than they should be. Several areas of asphalt had to be relaid after breaking up during practice, and the surface was generally low-grip – especially off the racing line. A fiddly chicane where the track passes under a ramp for the Florida Turnpike got the thumbs-down too.

2022 RACE RECAP

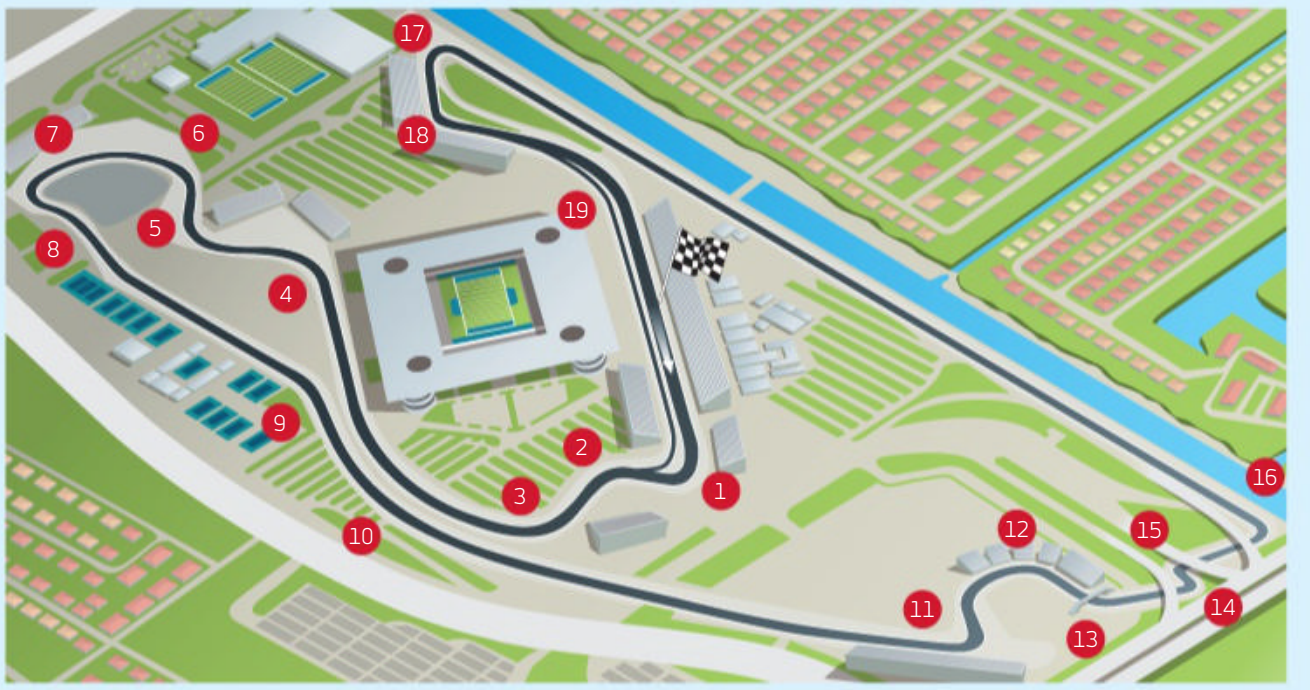
Ferrari locked out the front row with Charles Leclerc ahead of Carlos Sainz but Max Verstappen got by Sainz at the start and then chased down the leader, who was struggling on the medium-compound Pirellis.

The race was otherwise fairly processional owing to the slippery nature of the track off the racing line. A Safety Car triggered by Lando Norris and Pierre Gasly colliding on lap 40 added some intrigue in the final third of the race but Verstappen fended off Leclerc at the restart and held on to win.

Sergio Pérez made a spirited attempt to wrest third place from Sainz but failed, then was held back by a brief engine issue. Mick Schumacher demonstrated the difficulty of passing on this track by having a clumsy shunt with his friend and mentor Sebastian Vettel.

KEY CORNER: TURN 7

The second in a tightening sequence of three left-hand corners where a precise line is vital, otherwise the car deviates from the line with good grip and is dragged increasingly wide.



RACE DATA

Circuit name Miami International Autodrome
First grand prix 2022
Number of laps 57
Circuit length 3.362 miles
Race distance 191.584 miles
Lap record 1m31.361s Max Verstappen (2022)
F1 races held 1
Winners from pole 0
Pirelli compounds C2, C3, C4

CAR PERFORMANCE

Downforce level Low
Cooling requirement Medium
Full throttle 58%
Top speed 199mph
Average speed 134mph

TIMETABLE (UK TIME)

Friday 5 May
Practice 1 19:30-20:30
Practice 2 23:00-00:00
Saturday 6 May
Practice 3 17:30-18:30
Qualifying 21:00-22:00
Sunday 7 May
Race 20:30
Live coverage Sky Sports F1
Highlights Channel 4

THE PAST WINNER HERE...

2022
Max Verstappen
Red Bull

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hackett.com

To *GP Racing* readers of a certain vintage, the phrase 'On Safari' might call to mind a 1980s childrens' TV game show hosted by Christopher Biggins and future EastEnders actor Gillian Taylforth. Unlike events later in Taylforth's life, the action did not take place in a Range Rover. But we digress. 'On Safari' is the theme of the campaign for Hackett London's latest collaboration with 2009 world champion Jenson Button and comprises garb from socks and shoes up to chinos, shirts, cardigans, blazers and jackets.

Shot by fashion photographer Charlie Gray, the far-flung trip was described by Jenson as "the most spectacular photoshoot I've ever been part of". He's pictured wearing selected pieces from the fashion company's spring-summer 2023 range including a Hackett Velospeed and a Safari Check jacket. Hopefully someone will arrive shortly to help him with all that luggage...

FLEUSS AUTOMATIC MARLBOROUGH

Price £389

spinnaker-watches.co.uk

Spinnaker is a brand which produces dive watches at the more affordable end of the spectrum from the likes of Omega and Rolex. Its new limited-edition timepiece is named after Marlborough-born diver and engineer Henry Fleuss, an early pioneer of the rebreathing technology which enables divers to operate with just a compressed oxygen tank for support. Fleuss's invention was used in the construction of the Severn Tunnel, which carried the Great Western Railway into Wales, and paved the way for dive systems which underpin a vast spectrum of undersea work to this day.

Cathedral-style hour and minute hands complement the vintage aesthetic within the 43mm marine-grade stainless steel case. Water-resistant to 150m, the watch features a choice of a custom-built seven-link stainless steel strap with fold-over clasp or a water-resistant leather strap.

AVI-8 HAWKER HARRIER FARLEY

Price £260

avi-8.co.uk

"I'm not allowed to say how many planes joined the raid, but I counted them all out and I counted them all back." So went the now-famous phrase uttered by BBC war correspondent Brian Hanrahan as he reported on a sortie of Harrier 'Jump Jets' from HMS Hermes during the Falklands conflict in 1982.

The iconic Harrier, famed for its vertical/short take-off and landing capabilities, began development in the 1950s and a key figure of its evolution into the Sea Harrier is test pilot John Farley, after whom the latest aviation-inspired watch from Avi-8 is named. After his retirement Farley became the manager of Dunsfold Aerodrome, now home to the BBC's *Top Gear* test track.

The new timepiece echoes the look of the Harrier cockpit and its flight instruments, with brushed and polished detailing within the 44mm solid marine-grade stainless steel case. A leather strap with military aviation-inspired detailing completes the effect.

WEB EYEWEAR

Price £TBC

web-eyewear.com

Alfa Romeo's F1 team has bolstered its impressive array of sponsors/partners by launching a new limited-edition capsule collection with WEB Eyewear. The sporty frames claim to combine comfort and functionality and are available in three different styles, two designs of sunglasses and a prescription optical frame.

The WE0357 and WE0358 sunglasses offer a choice between a half-rim metal pilot frame with spoiler and triple bridge and a rectangular acetate frame with soft lines on the lower rims. Racing stripes and diamond-shaped pins enamelled in the team colours subtly allude to the F1 connection. The WE5420 optical frames feature a rectangular acetate front with metal temples, and also include enamelled elements in team colours.

FLAT CHAT

{ FULL THROTTLE MUSINGS WITH MATT KEW }

PICTURES motorsport IMAGES

WHY RED FLAGS SHOULDN'T BE GREY AREAS

Formula 1 officiating shouldn't feel this ad hoc. But too often waiting too long for too debatable a decision gives the impression that there's someone in FIA race control frantically flicking through a printout of the sporting regulations mid-race, trying to put their finger on what to do next.

Consider the Australian Grand Prix. A third red flag created a scenario where a processional finish behind the Safety Car was required (although the clear intention was to have one last go at a green-flag finish). The order for this one-lap act of ceremony, which therefore decided the race classification, was determined by the previous red-flag restart grid minus crashed cars. As such, the 56th lap, when said cars were wiped out, seemingly both did and didn't count.

Haas protested, arguing the FIA could have used the running order from the approach to Turn 1 as a more up-to-date measure. While this case was thrown out on the fair basis it might encourage drivers to dive past under braking when there's a red flag, the route to reaching the right conclusion was less robust. Relying on the old grid was the best outcome "in the time available", wrote the stewards. But that isn't good enough. It implies a grey area, that with less pressure a different outcome would have been possible. When there's this much at stake, there needs to be uniformity.

The Safety Car leads the field round to 'finish' the Australian GP, but the FIA's decision-making in deciding the order of the cars has caused much controversy

Wind back to the prior round in Saudi Arabia. Aston Martin successfully overturned a penalty to reinstate Fernando Alonso in third place by highlighting inconsistent precedent. The FIA reckoned events in Jeddah exposed a "specific circumstance", but the team citing seven past examples suggests otherwise and theoretically allows old results to be thrust into varying degrees of doubt. While the FIA argues it is under-resourced, Aston could successfully protest because it had a sporting director who knew the rules sufficiently to find a loophole and argue a convincing case. If a team can know the exact letter of the law, the lawmaker has no excuse not to as well.

IT USED TO BE THAT AFTER EVERY GP, THE RACE DIRECTOR WOULD INVITE MEDIA TO QUESTION THEIR DECISIONS

It used to be that after every GP, the race director would invite media to question their decisions. This guaranteed a degree of transparency and some form of explanation, however unsatisfactory. But these Q&As were knocked on the head after Abu Dhabi 2021. Largely for protection, Michael Masi's successors have been taken out of the public eye and anything that might constitute a distraction deleted from their schedule. Now it feels like a layer of scrutiny has been lost and that there's a lack of justification for some contentious decisions.

Admittedly, you can largely anticipate the FIA reply. Nine times out of 10, it will rightly argue it has deployed this Safety Car or that red flag on the sound grounds of safety. But largely unaccountable events in Australia only fuel the combustible debate regarding whether the top flight is primarily 'sport' or 'entertainment', since it felt as though priority number one was to get cars racing – no matter if the order in which they lined up was fallible

Remember that the 2022 Italian GP finished behind a Safety Car, rather than the race being red flagged. That anti-climax was met with fan outrage. The rules haven't changed since but seven months later, the handling of a similar late-race scenario was vastly different. It doesn't really matter which way is better, so long as there is consistency. Regardless of how high F1 gets on its Netflix fix and all the bucks that popularity brings, there cannot be the impression that rules are enforced on whims for the sake of a dramatic spectacle.

PICTURE: SIMON GALLOWAY. ILLUSTRATION: BENJAMIN WACHENJE

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