

[Transcript] Sky Sports F1 Podcast / What does a strategist REALLY do? | Q&A with Bernie Collins!

Hello, everyone. I hope you're well. Welcome to this week's episode where we've got a fascinating Q&A with Bernie Collins. Now, Bernie has joined our team on Sky Sports F1 for this season. She was previously at Aston Martin as a head of race strategy and a performance engineer at McLaren. It was a really, really interesting chat. Loads of great questions, so thank you very much for those. I hope you enjoy it.

Hi, Bernie.

Hello, Vaz.

Hello. Welcome to the podcast.

Thank you for having me.

Good to have you. We have received so many questions for this Q&A, so I am super excited. We will try and get through as many as possible. They're an awful lot. I tried to separate them as best I can in different sections, so I want to talk to you about your role as a strategist and we want to get into all of the nitty-gritty of that. Then we're going to ask you a little bit about starting out, how you got into the industry, and then also about your new role with us on Sky Sports, on camera, which I imagine is quite different, but I'm sure there's some similarity.

It's very different.

It's very different. Well, there we go. I guess first question is, what is a strategist?

I ask that because I think as viewers and fans of F1, we think we know what a strategist does, but I want to hear it from you. What does a strategist do on a race weekend?

It was a me-in job that a strategist does, and I think what everyone thinks about it is a Sunday race day, so what you're trying to do is plan how the race might go. So you've got in your head, maybe at the start of the race, how many stops you think it's going to be, what tires you're going to use, but then during the race, you react and everything that happens around you, safety cars, weather conditions, other drivers, etc. Ultimately, your goal is to get the best possible finished position for your two cars, and generally the strategists that we see on the pit wall work across both of the cars in that team.

So, yeah, you're trying to get the best possible points for the team, for those drivers.

But it's a lot more than that, and that we do a lot of planning before we get to the event of what we think it might be. We start to look at how we want Friday to go, what we want to learn from the tires, what other information we're trying to gain, like pit losses or overtaken thresholds, and then through qualifying, you're trying to get good track positions, such as the driver's the best chance of getting a clean lap in, or trying to decide if you need to run again, or a new set of tires, or all these sorts of things. So, yeah, it's throughout the whole weekend, then post weekend, a lot of analysis. So, how did your weekend go? What can we do better? What can we learn? So, everyone thinks about the real split of it, but there's a lot before and after as well.

It's quite a full-on job, by the sounds of it. I mean, if you look at your week, does it start somewhat like a Monday or Tuesday of a race week, and goes all the way through to Wednesday of a post race?

Yeah, exactly. And I think for all of us, it depends on whether it's a double header or triple header. But, yeah, for like a single header, you're starting the Monday, Tuesday before you have your pre-event briefings in the factory, where you're discussing with the

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team what your plan is. You get into the race weekend, then you do your post race weekend. So, yeah, it's about a few days before, a few days after physically being on the track. Yeah, full-on. OK, Matt on Twitter wants to know, on average, how many times or how often are race strategies recalculated during a race? Are they predominantly done by human calculation, or do you use software? And what aspects of a race cause a race strategy to be recalculated? Yeah, so we recalculate really a lot, like every lap, sort of, or every sort of change of position. Really, that often happens. Yeah, you're doing it quite a lot. And it's a mix of strategy and human, or the software and human calculation. So, there's lots of things. If you think of the real simple things that might change, a strategy is built up of, we just think of the fastest race with no interaction of cars. You've got a tyre model we're looking at, the tyre degradation, so how quickly the lap time gets slower, as you'd like, through the run. The pit loss, what the pit stop is going to be, the life of the tyre, so how many laps you can do on it, and the pace delta between the tyres. So, what's the difference between a soft and a medium tyre? So, all that makes up your model. And through the race, you're sort of, the software's maybe giving you some indication that degradation is higher than you expected. So, the lap time is getting slower more quickly than you expected it to. Or the life of the tyre is shorter. That might come from the tyre engineers in the garage. So, there's lots of different impacts to the model. But as humans across the factory and the pit wall were discussing what changes we want to add to the model at that stage. So, we might reduce the life by a few laps, and the model will quickly recalculate what the fastest race is to the end. But we're debating it all the time, whether we think the driver can manage a bit more and stretch out that life or whatever it might be. So, there's a lot of discussion going on, and it's a mix of the software and the human element of it. Interesting. And, Dan on Twitter would like to know, what software do teams use to calculate strategy? You know, does each team have their own, or is this shared between all the teams? It's very much a mix. The majority of teams have now moved to some standard software. And, interestingly, that standard software I've realised, post-leave and F1, is also used for things like football and rugby. So, there's a lot of different trackers in terms of, you know, for football, like where people are playing on the pitch, or how many runs people have made, all those sorts of things. Because a lot of it's the same if you're tracking like GPS of the car versus GPS of a player, it's sort of similar interactions. So, I find that interesting. But a lot of the software is there to help us do our job more easily. So, some of the calculations, like in qualifying, is your lap going to be fast enough? You're just taking what lap time you're currently doing away from your fastest. And it's very simple, like subtraction calculation. But the software is helping you to do that really quickly and without any errors. I'd say there's maybe seven, eight teams used to see them so far now. And two or three that do their own bespoke in-house software. A lot of it, you might question why a team uses a CM software as someone else, as they're not a competitive advantage there. But the software we put lots of inputs into, we put our tyre model in, we put what we think the piece of the car is going to be in. So, I think the intelligence in the software is the parameters that you put into the software, and that's different for each team. So, that's why it's okay to use a CM software as a direct competitor. And presumably, if you develop that software as a team, that's a huge cost,

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right? I would imagine. Yeah, exactly. And one of the things is, as you have this off-the-shelf software, as we think of it, you can suggest improvements to them. And their team can go away and work with that when your software team is working on something that's more fundamental to the piece of your car. Yeah, very interesting. I'm so fascinated that it's used by other sports as well. I guess there is a lot of crossover between Formula One and other sports. There's an Instagram question here from Skinny04. What was it like working for a Formula One team? Yeah, I want to get into how did you enjoy the travel? How did you enjoy all the other aspects around being a Formula One team? So, I think it's weird because you've worked enough for so long that you think it's a normal job. That's the first bit that I find weird. So, you've been working in Formula One, talking to people in Formula One, all of your friendship groups, people that work in Formula One. And it's only really when you step back from that that you realise it's a really special job and the people are really interested and people really want to go and do it. But it's really easy to become like that's just normal to you. Doing the travelling bit specifically is very odd because we do 23, 22 races a year. That travelling group becomes like your family. So, you travel out with them on a Wednesday, you spend all week with them, you travel back with them on a Sunday night or a Monday. So, you spend loads of times with this group of people that you've not necessarily chosen to be with. It's a very diplomatic way to say it. You know, it's people say like you choose your friends. Well, you don't choose your colleagues. But, you know, it was really nice atmosphere. Everyone really helped each other. Sometimes it's tough because of the environment or the heat or whatever. So, yeah, it was really lovely community. And it's weird. I think the thing that people maybe don't realise is when you travel, a lot of us get on that flight on a Wednesday, go on wherever it might be in the world. And all the other teams also get on a very similar flight or in the airport at a similar time. So, you get to know lots of people from the other teams as well that you chat to. And it becomes like this big like circus travelling community together. We see lots of people. So, yeah, I really enjoyed that. There's a lot of pressure obviously. You're trying to do a really important job when it comes to Sunday. You're trying to get it right for the whole team, especially on the pit wall. You feel like if we make the wrong call on a pit stop, you know, there are hundreds of people in the factory that have worked to get this car as quick as it is really affected by that. So, it is like this sort of pressure environment. But I really enjoyed working in it. I enjoyed the travelling around the world, seeing the different communities, embracing the different tracks, a lot of tiredness, a lot of grumpiness at times. But yeah, it was really good. Yeah. Do you think it's something spoken enough about in the sport that the impact on people's lives, obviously, you know, 23 races away from families, from loved ones at home, that's a lot of pressure, isn't it, to put on people. And I guess, you know, perhaps as people get older, maybe when you're young, you know, just starting out on a Formula One team, it's the most exciting thing in the world. But as you get older, it must change your perception of that part of the industry. Yeah, it definitely does. Like I think when I was young, I did it and you did all the holidays around it. So, you know, you go to Australia and you decided to stay out for a week and it was great, you know. And there's definitely that sort of branch of people in the paddock that enjoy all the travelling and the time away. And I

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definitely did that for a long time. And then you get to a point where you just sort of think, you know, maybe it's not. But then I think there's a branch of people as well, then older guys that their family are a bit more grown at home, so they don't necessarily need to be at home so much. And that's quite a nice environment. I think teams are starting to do a much better job at it. You know, when I started, there was 18, 19 races and that felt like quite a good number. You were never away for really more than two weeks at a time. Now it's got more and more intense as time has gone on, particularly the triple headers. I personally felt really difficult. But teams are starting to do a bit more rotation with engineers or mechanics. There's a lot more help with the track for a start than we used to. We travelled with a physio that was there all the time that could help us with whatever it was. There's a load of team doctors. There's a paddock doctor. So there's always people there to look after you. So I think that side of it has got a lot better than a few years ago. And it is getting better all the time.

Yeah, especially if we go up more and more races to what 25 is being talked about.

Okay, Tweet from Sarah. Hi, Bernie. Which driver that you've worked with was your favourite and why? Brackets, go on, say Jensen.

I can't say Jensen. The unfortunate thing with Jensen is I only worked with him for the one year at McLaren. So I worked with him for 2014. And I really enjoyed that because I was learning so much. And Jensen at that stage had loads of time to teach me stuff. So it was really interesting dynamic, but it only was the one year. Obviously I got a chance to work with him again soon, hopefully through Skype. So really looking forward to that. I think the drivers have all been really different characters for various reasons. And I really enjoyed a lot of what they brought. The person probably that I was, you know, the friend is with maybe Sebastian last year, you know, and again, I guess that's the stage he was in his career. It was really nice to just have that friendship.

Yeah, what was it about Sebastian that you enjoyed most about?

I think he was quite relaxed. You know, I think the car wasn't as good as we would have hoped through that time. So it was more of a learning process across us, what we could improve in the other aspects of it. So it wasn't necessarily the pressure of, we're going to try and get a podium every week because we weren't in that position. And yeah, I think he's been there done that. So it felt like he'd sort of, the pressure was awful a little bit through that relationship.

Very interesting. Tweet from Carl, which driver was the hardest to get your point over strategy wise and the one during the race who needed convincing a different strategy was best?

I've been very lucky. It's a very diplomatic answer, but I think I've been very lucky in that we've had some very heated debates in the office. So we actually spend maybe an hour on a Saturday night to be in what we think the strategy is going to be for Sunday and again, maybe another hour on a Sunday morning. So actually a lot of the permutations that are possible during the race have been like well debated in advance. So although we go in with a plan A, we've got a lot of this might happen or that might happen already lined up.

So thankfully, nine times out of 10, maybe more than that, when we've made a call to do a pit stop, it has been acted upon, maybe an advance has been a bit of, I'm not sure.

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The one that sticks out in my mind was a wet rusher a few years ago and both drivers actually decided that they knew best and would stay out on track when it was wet and then both got around the first corner and was like, oh, it was quite wet round there. I'm like, oh, that's what we're trying to say. So I think you've always got those incidents, but you try and go back afterwards and review what you knew at the time and how you could have conveyed that more clearly to the driver. And what we did in that instance was actually they came back to us and said, well, this is what the information I didn't have from you or what you could have told me better or we looked at the information that they had as well. And that was a very famous race because lots of, you know, I went through the radio comms, lots of people didn't listen or...

On the land day.

Exactly. Yeah, there was a lot of discussion. So it's just a learning process, like any working relationship, how you can best understand what they hear and know, because they actually hear reasonably little in the car.

Yeah. And I guess trust, right? You build it up and that's why you see strategists but also engineers' relationships develop and stay what, for five, six, seven years because you have that trust that you can work through them all.

Exactly. And it's just, it's almost like the, you know, that relationship you get to where you say something and someone can finish your sentence, like that's the ultimate goal. You want to be at that point where they understand. So yeah, I've been very lucky, I think, generally.

Yeah. I just want to ask you on Seb, did he, was he someone who had a, or who enjoyed hearing about the strategy? Was he someone who took an active role in really getting into it and being a part of that discussion?

Yeah, I think so. And I think when Heath was first joining the team, obviously, we've had years of listening to Sebastian at Ferrari, questioning the strategy, arguing the strategy, whatever. So I was a bit apprehensive when he joined of how hard he was going to be to work with and actually then it was pleasantly surprised. But I think the funny thing with drivers is generally on a Thursday or Friday, they're not too bothered with the strategist. And then by Saturday night, Sunday, you become the most important person in the room and everyone wants to talk to you. Both drivers want to talk to you. Both drivers are interested in their strategies. So I would say, yeah, Sebastian definitely spent a lot of time in it himself and he would come up with, oh, there was a race in 2000 and whatever where this happened, go and have a look at that one. And I go and research that race.

Yeah, exactly. Like he knows a lot more historically than I would know. But I think all of the drivers are, you know, so involved in their strategy on Sunday morning. I think much more than people in the outside world maybe see. We go through it with them both individually. We go through their start, tire a lot. And so they're both, they both need to have bought into it when they leave that room on Sunday morning or it won't work.

Yeah.

Even if there's a slightly different reason they want to start tire to you, you need to really take that on board because if they're not fully in the zone when the lights go out, then you're not going to get the right answer out of them at the end of the race.

You said when you first worked with Seb, you were maybe a little bit nervous, a little

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apprehensive about it. How long did that last very long? Was he super warm and super friendly with you?

I think he was really good straight away. And straight away he was really open to the ideas that the team had. I sort of expected, you know, racing point and Force India, whatever. When he came from Ferrari, I thought, here's someone who's, you know, four time world champion coming to a team lower down the grade, less resource. We have less people on the ground, less in the strategy department, et cetera, et cetera. You know, is he going to really think in all these guys are joking about? And actually he was really open to our ideas and our perception of things. And I guess over the years we had had podiums when we maybe shouldn't have had or we've had good results when we maybe shouldn't have had. So I guess he'd taken that on board as these guys know what they're doing. So I'm going to take some of their ideas and input some of my own. So yeah, it was much more an interaction between both sides of trying to get the best from both ideas than I thought it was going to be. So yeah, it was quite quickly, very easy.

Nice, yeah. Never too old to learn.

Never too old to learn, yeah.

Even if you're a Sebastian.

Even if you're a Sebastian Vettel.

OK, a tweet from gullinat. Is it common for teams to have code words to secretly relay strategy? For example, we often hear of some drivers falsely saying their tires are good or bad when the inverse seems to be the case.

Yeah, so there's a few points in that. So it used to be, and the rules have changed in this, that people had like switches on their dash so you would have like a tyre switch where you could mark how good or bad your tyre was. So actually you could say to the pit wall without ever saying anything on the radio how good or bad it was. But the radio information is shared amongst all the teams. So all the teams hear the radio that all the other drivers are doing. So there is a little aspect of times of that. I think my experience has been in the past that potentially that leads to more errors than it does to the good. So if the driver incorrectly remembers what your code word is, then it can be done actually wrong.

As they're driving a car at, you know, quite extraordinary speeds.

Yeah, well I'm always really impressed with how well they do. Like to all of the switches in the steering wheel, everything that you're asking with them as well as getting the fast lap done. And then sometimes the driver will come in and go, oh I seen on the TV, it's like how do you have the margin or the overhead to watch any of the TVs as you're going around the track. But you will get drivers that ask questions they've picked up from whatever's going on on the big screens. But yeah, the communication stuff, but then you also get, you've had so many incidents over the years of a team telling a driver a box in code words and they might not say box a slap, they might say a code word. And then the driver just responds with yeah, box a slap or the person on the pit wall says it in such a voice that it's obvious just from the tone of the voice what they mean. So they might say like yellow four, but they'll say like yellow four, yellow four, yellow four. And it's just like the excitement is so much that it's obvious what they're trying to do regardless of what the

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words are. And so yeah, it's real, I find the code words saying really interesting dynamic, but I think majority of teens I tend not to use them.

Yeah, to speak from Rob, how fine is the art of inputting potential safety cars, etc, in to cut down fuel weight and is the risk worth it?

So yeah, that's a really interesting question. There's a few things. So on the fuel it generally is worth it because if you think that for most circuits, like an average circuit 10 kg is around three tenths of fuel a lap or three tenths of lap time and over 50 laps that's massive, you know, that's a lot to carry. You're not talking 10 kg generally for a fuel for a safety car, you're talking about two or three. But every lap for 50 laps to carry that extra weight is massive. And your launch off the line is dramatically affected because you're carrying that extra weight at that point. So you'll tend to find that even ignoring safety cars just for straightforward race, people will under fuel the car. So starting off, there's not enough fuel to make it to the end of a race. And then you add an allowance for safety cars. And the reason for that is you try and race to get to your first or second pit stop if it's a two stop race. And then in the last, generally, you can start to save a little bit more fuel. So you've spent your fuel at the start and you're saving a little bit towards the end. Because you've nailed down your truck position or you can just manage enough for the overtaking. It's always difficult. We tend to look a lot at the percentage chance of safety cars, you know, the backers of this world, higher chance of Silverstone. So it is generally worth the risk. Teams look as well as if we're taking out two or three laps of safety car teams look at how hard that will be to win back. Should there not be a safety car? And how detrimental that would be in lap time to win back. So there is a lot of analysis goes into that possibility. The other thing is that if your safety car comes very late in the race. So in the closing laps, you can't guarantee it's coming. So you've started to win back the fuel already anyway. And then often the safety car comes and you end up with too much fuel in the car and you've had 20 laps of saving. So they tend to look at the lift and coast required. And we just mean time off, throttle off breaks going into the corner required to save the fuel for whatever you take out at that point. So there's a lot of analysis goes into that. Such a fine balance, isn't it? Yeah. Does it often go wrong? I think quite regularly you see, I think a few years ago Alpine were always really aggressive on it. So their second stint was always a much slower and they were always pushing the drivers really hard to save fuel. I'd say more often or not teams are more on the cautious side. So you often find that teams will end up with a bit extra fuel in the car. But yet it's not gone, let's say, dramatically wrong recently. I think teams are really nailed down the art of it and you know which races you can sort of get away with it. All on that very clever software. Formula Cracked on Twitter wants to know, what was the most exciting race you've seen from a strategic opportunity viewpoint and what race do you reckon your strategic input had the most influence on the outcome? The race where my input had the most influence, there's two that spring to mind that's easy. I'll answer that bit first because that's an easier question. There's a Barri and Wynne with Chaco in 2020 where he actually crashed on lap one and through that lap it's Barri and that circuit layout is a very quick lap. So you've got a lot of decisions to make very quickly. But we'd started on the soft tyre and we knew the medium would be a quicker

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tyre for the first stint. So even though Chaco didn't need to change tyres as tyres were actually fine after the shunt, which is very unusual. Normally you definitely need to change tyres when you've had a spin. We knew that the other tyres were quicker so we made the call to stop under the safety car and change to the other tyres because we knew it was a fast history strategy. So that's actually one of the easiest decisions I've made but also one of the ones that had the biggest effect on the race I think.

Because he won.

Because he won, yeah. There was lots of other things, the car was fast, Mercedes had a bad begin. There was lots of other things that made the win but that made us be in that position to take it up. And that was just all planning in advance. I knew which tyre was quicker at that point. I knew that we were last anyway so it was easy money. And I do remember his race engineer beside me going, are you sure? And I was like, yeah, I'm so sure on this one. So that was the one. The other one that was a Brazil, I can't remember the year but it was a wet race in Brazil again with Chaco. We actually made no pit stops but it got wetter and a little bit drier throughout the race and there was a few red flags where we changed tyres. But that was really difficult because every lap you're looking at the red are, you're trying to decide what the weather is going to be, deciding not to stop as equally difficult as deciding to stop. And we were in the very closing laps in a podium position when I think it was Verstappen overtook us. But actually Verstappen should have never been where he was. We made some better decisions I believe than those guys on that day. So those are ones where even though we made no pit stops I feel like all the decisions we did make were for the right reasons. The strategic races that I think are interesting are like Barri and this year I really enjoyed watching because it's one of those races where it's about trying to hit the optimum strategy. It's a multiple stop race, easy to overtake. So those are the ones that I think are really interesting from a strategic point of view.

Yeah, Joshua on Twitter, how often does a race pan out just like you thought it would strategy wise? I'm going to guess probably very few times. And how much do you think less practice sessions and testing would have an effect on this number?

I would say that a race never, I don't think it's ever planned out. We've never done the plan A stop lap exactly right. And there's loads of reasons why it doesn't pan out. It could be a safety car, it could be traffic, it could be your tyre models wrong, whatever it is. Like the Monaco for example, the tyre model very rarely changes because it's not that important to the race. But the traffic in the safety cars mean your race plan changes. So yeah, it always changes quite a lot. What was the second one of the questions?

Because obviously in Baku we're talking about potentially reducing the amount of practice time. We might only get one practice session in FP1. Do you think that would have an effect on how you guys work as strategists?

Yeah, I would really like to say not a one practice session straight into qualifying.

But now that you're on this side of the fence?

So on this side of the fence. Well on the other side I always thought it was more interesting from a strategy point of view because actually it's the team that does the best analysis, the best setup, the drivers that are more on it when they get to the first session. That's going to be interesting. But from an engineer point of view you always want more data. The

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more that you have a tyre model the better nail down your race is going to be. So I find it really good when we have like a wet Friday, nobody gets good amount of data. Then you go into Saturday and it's really like everyone's reacting live to what's going on, reacting live to the tyre model. Those I think are much more interesting races. So I would quite like to see less of the practice session but all of my engineering colleagues will say please don't take quite the practice session.

I mean I guess we love data.

Yeah you drove as many hours as you could on that track wouldn't you.

Andrea on Instagram, hi Bernie, if you could make one rule change in FP1 what would it be and why?

I am just going to say I would get rid of the practice, I would get rid of in the standard weekend I get rid of Friday and I just have the FP3 quali race over two day weekend. I think that would just make it much more, I know why we do the Friday and I get that it's like more running for everything and I think the Friday is probably good at the minute because we give the young drivers an opportunity throughout the year to drive in that session. But I would quite like to see less and more reaction on the ball during the race to what's going on.

Yeah I think everyone would like to see that, fans as well. Con on Instagram, which is your favourite circuit to go to?

Ah right, I think there's favourite circuits for a load of different reasons. I think for the fans, probably Japan but not for the jet lag. I struggle with the jet lag. From a circuit itself I think Brazil, Sambalos and me as a circuit, it's really nice to see.

Great elevation as well for fans and you can get to points on the track on you and see the entire circuit.

You always do the track walk and you think wow I've forgotten how steep or bad this is.

So yeah there's a few different reasons why certain circuits, there's certain countries that I love, you know I love going to Canada for example. So yeah there's a few interesting ones.

One who you might know is engine mode 11 on Twitter says it's probably a bit niche but with the rise of AI has that affected the strategic decisions made by the teams or is it not mature enough yet to be considered?

I would imagine that AI is mature enough yet to be considered but F1 or maybe a little bit, they've not embraced it as a mode yet or not that I've experienced. I think AI, the power is going to come in AI predicting what you think your competitors are likely to do.

So the more sophisticated we can build our model of another team, the better I think for our own strategy decisions and that's loads of things. So are they likely to be aggressive trying to undercut us? Are they likely to extend their tire further? What their radio comes mean in terms of what they're thinking or when they talk to a driver about front finger, like how many laps is that to stop? There's loads of things that we could start to train a model on. Simple things like what likelihood they are of doing a certain start tire so if they stop and start at the back is he likely to go for the harder start tire.

So the more that we can build those models around other teams I think is going to be really interesting. Selfishly probably as a strategist wouldn't like to see them replace

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a strategist on the pit wall because I think there's always going to be that human interaction but I think we'd really love to model a strategist in another team and the question that I've not quite got to the answer of yet is for example when I left the pit wall did fundamentally some aspect of Aston Martin's strategy change and actually does your AI need to be modelling Aston Martin's strategy or the individual strategists? So it's an interesting question of because some teams switch strategists week on week so do you need to model which strategist it is on the pit wall or do both of them react in a very similar way? So it's a really interesting problem. I think as well it's something that everyone's going to have to grapple with is because it's live sport, the whole point of us tuning in on a Sunday afternoon is because we don't know the outcome, that's what makes it so exciting. We definitely don't want to get to a stage with the sport where you turn it on a Sunday afternoon and you've got the little bars along the bottom saying there's a 99% chance for Stappens going to win this weekend, that's not what you want to see is it? Yeah, no exactly and I think, I don't think it will get there because I think we all love the human interaction but it's going to be interesting to see how they can use it. Maybe limiting technology, maybe limiting that development. Okay, I think that's everything on being a strategist, not everything but there's a lot of being a strategist. So I want to ask you a little bit about your own career and how you started out in Formula One. Just try and if you can give us the abridged version of being a youngster to getting where you are now. Yeah, so I didn't know what I wanted to do at school so I decided to do mechanical engineering because I like mathematics and physics so I thought that's quite a sea of fruit and there's lots of different jobs you can do at the end and then even through that I didn't know what I wanted to do as a mechanical engineer but I enjoyed it so it was fine and then an opportunity came up to join the McLaren Graduate Scheme and I thought well yeah that's really cool and it was really interesting because I went there thinking oh even if I just get to see Ryan McLaren that's fine, I'll go home happy, that's a free tour. Yeah exactly, it's a free tour. So I joined them as a graduate which I did a lot of work in design and then I joined the design office, I spent my first five or six years in design office and then I moved to performance engineer with Jensen and then moved from McLaren to Aston Martin or towards India as it was then and that was really interesting to move because I moved as half performance, half strategy but as I moved, I'd never done strategy before, as I moved the strategist left it was like oh can you just do a bit more strategy and then since I've been there I've only ever done strategy so it's been like evolving but yeah I was an engineer which is just why I've got into it. Yeah that's really interesting, what I find fascinating is you've done a lot of the different roles that I guess as a strategist you're calling on right, you're calling on your performance engineer, you're calling on the design team at all the points throughout a weekend and is it a case of you kind of have to do everything below you to go in above would you say? I think well I think that's not common, I think lots of people like join the engineering team or the strategy team as juniors and then work up through that team so I think my route's been a bit uncommon, like a lot of strategists on the pit wall are mathematicians actually or I've done a degree in math and not in engineering but I feel like I've really benefited from understanding a bit of what's going on around, a bit more of what's going on around me in terms of those engineering roles so yeah it's a bit of a mix

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I would say. What were the main differences between, so you obviously left McLaren, went to India, quite different teams, what were the main differences between them? I think at that time Forest India was a very very small team obviously lots changed since then and McLaren were this massive powerhouse of F1 so there were some like really obvious definitely left this really shiny you know lovely factory for this much older not so shiny and lovely factory and the size difference was massive at that time you know I left and I remember thinking the suspension group in McLaren there was like 10 people there was like a front and rear group and then I moved to Forest India and there was an office the whole office seemed tiny and I was like well for example where's the suspension design group and they were like it's that guy I was like that guy that one guy you know okay so just the whole sizing of it was different I think actually as a young engineer starting out in the tracks I rode that was brilliant because there just wasn't enough people to do all the work so you instantly got involved in loads of things that you would have never been given before because there was no one else to do it and it was really good for prioritising what was important like you only worked on the stuff that was really going to make a difference and you just ignored everything else so yeah there was huge differences and it's over the years I'm sure they've got much closer together and the resource restriction the budget capital had across all of the teams now and so I imagine now the Aston Martin I left is much closer to the McLaren that I left and definitely with their new factory and stuff but yeah that's been an evolution. Yeah I bet. Gemma wants to know what do you think from your experience as a very successful woman in F1 is needed to encourage more girls to take part and support them once they've got their foot in the door? Well when I was watching F1 when I was younger there was a lot of like drivers on TV and you only ever seen a driver and I knew I was never going to be a driver and they were all guys which they're still all guys but I think we've got a lot better now promoting all the other roles within the engineering department all the other roles on the pit wall all the other roles in the team and there's a lot more understanding that females can do any of those roles so I think that has got a lot better I think so there's a lot more understanding of what you can do there's a lot better image of engineering it used to be like dirty overalls and stuff so people really didn't think of designers or creative I think that's got better and I find that the opportunities have been there like very equally there so it's just been restriction that maybe people have placed upon themselves thinking they can't do it or it's a male role or whatever but everything that I've applied for went for the opportunities have been there and it's just about shown representation I guess so being fit to do things like this and say you know females are there doing it so there's no reason why you can't so we're getting there I think.

A tweet from Nerida as a female and aspiring aerospace engineer how can I work trackside in Formula One what opportunities will get me there?

So I get asked this type of question loads but the first thing is it's good that you're doing your degree that's really good try and get some experience that either leads you to teamwork or trackside environment so I did things like Formula Student which is like an I am a key run program where you build a single-seater race car and that showed sort of some teamwork elements and some trackside elements there's loads and loads of race teams out there doing your teams GT3 teams, karting teams, race tracks.

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Desperate to have some help.

Yeah exactly need good volunteers need good people to help out so I did a load of time when I was at McLaren working for the GT3 teams getting some trackside experience and just really like one I wanted to learn that I enjoyed being at the track but it was good for me to prove that I wanted to be at the track and was prepared to put in the hours and stuff apply for everything that's going all of the teams have summer internships, year placements whatever it might be apply for all of that sort of stuff and if you don't get it which you know there's more people and jobs available just get some feedback like why didn't you get it what could you do differently next year just keep trying.

Sound advice.

Okay want to move on to your new life and your new role as an analyst with us here at Sky Sports what was the main reason why you left Aston Martin and why you're sort of moving into this different role in your life?

I think maybe like a lot of my decisions it's not necessarily been well planned out but I the 23 races become really difficult and I wanted to achieve more of a home life balance and that's actually and particularly I think post the COVID years you sort of had a bit of a reset and I think about things and I just thought I really enjoyed what I did before I really enjoyed working for Aston Martin I loved working for the team it was just an opportunity to have a bit of a reset and try and do something a little bit different so I decided at the end of 21 that I was going to start back and then I worked my six months notice to bring me the middle of 22 and yeah it was just I just sort of thought I can't continue to live life like I'm 21 when I'm not 21 so let's you know try and do something different.

Yeah well all power to us we've got you here at Sky Sports.

Tweet from Rob I'm loving your input on Sky this season it's great to get a different more technical perspective on what's going on but what would you rather be doing behind the camera or behind the pit wall?

What gives you the most satisfaction?

First of all thank you for the positive feedback the feedback's been really lovely which is really good.

It's really hard to say what I'd rather be doing currently because I've only done sort of the one event and getting another run out in Baku I'm enjoying like I'm learning so much about an industry that I've worked in for so long like how the guys put the production together like how it makes it's stupid like before I didn't think about what happened to make the stuff on screen it just came to me and I listened whatever and now I'm learning so much about the technicalities of how they build a program together how it goes so I feel like I'm learning loads I feel like I'm really enjoying this aspect of learning which I'm loving I'm enjoying watching the race again because before when you're on the pit wall you're very focused on your own race and now I'm really enjoying seeing what everyone's doing and trying to guess what they're doing I'm missing having all my data so I'm missing having all the interaction or knowing what's happening from a race inside so yeah there's definitely aspects that I miss and I miss the team element like you know they see and trying to pull together and really make the best of the car so I'm sort of missing that

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so undecided at the minute yeah let's come back to me at the end of the year that's fine we'll come back to the end of the season in Abu Dhabi Rob would like to know now you've seen F1 through the lens of Sky F1 what stands out as an observation that you didn't maybe think about when you were on the pit walls or anything that you've seen perhaps in the way that we do things in TV that has kind of changed your perspective on the sport yeah I think well like I say just how much goes into the TV because the teams have sort of 50 people limited at the track a few more with the marketing guys and the TV crew is massive you know all the cameras all around the track everyone back in London around the studios listened everything goes on so that aspect of the just a huge volume of people involved in making a TV production has been very new to me and the you know the dynamic you have where we're all walking up and down the pit line you're trying to get a little piece of information from someone trying to be everyone's best yeah so I find that or that you weren't doing before and I guess before I was on the other side of it of trying to give a little piece of information but not so much information so that's a really interesting dynamic now yeah ideas and knowledge is your currency exactly yeah yeah Sean would like to know if you could have done any other role in F1 team aside from the ones you've had what would you choose and why and I would really love to have a go at being a race engineer so on the pit wall speaking of the driver that aspect of it I think that would be well it's tough it's a tough gig and because we all know the abuse that they get but I think that would be really interesting role to try for a little bit and part of me I've only done it in practice but part of me loves the idea of giving like a proper pit stop a go but I know that I'd be really terrible at it so it would be really bad why would you be terrible well because I think when you watch those guys do it like their reaction and their calmness is like another level and even to the point where I can stand in the pit line and listen to a pit stop or watch a pit stop and go that's not very good just because something's been slightly out of sync and then you turn around it's like three seconds and you think oh there's no way I'd be able to do that so I'd like I've only done it unlike the practice ones but I'd love I think the competitiveness of me would really have me over there I'm intrigued that you haven't said driver oh yeah well so I have previous of trying to be a driver and I'll be very good yeah so in McLaren I got an opportunity to run in the simulator when I was Jensen's performance engineer and just so Jensen knows this I tried to get in his seat and I couldn't because his seat was too narrow so first of all they had to take the seat out because I couldn't fit in which is embarrassing but then as it was in the years where you needed to press the button for curves and you needed to use your battery yourself so I was pressing the button and the guys like yeah it's not working because you've not actually achieved full throttle yet okay so I need to try harder so I don't think I'll be very good at that yeah interesting I mean is there any part of the I guess I'm curious to know as a strategist obviously you're asking an awful lot from the drivers and it is kind of a really interesting dynamic in the fact that you you know none of the strategist as far as I'm aware no one else really on the pit wall has driven a formula one car yeah apart from the drivers so that is quite an interesting dynamic isn't it because ultimately I guess a driver if they're really annoyed with you could be like oh just you know you haven't driven enough one car you said what you're talking about yeah there is like don't get me wrong if someone said you you gotta go go for it I would definitely give I would definitely yeah and I just don't think I would be any good at it and there is a lot I think a lot

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of the the guys and guards are on the pit wall have experience in other series or you know junior formulas whatever and not to anywhere near the same level of course or anywhere but I think what they do is impressive how they work it out they're computing power you know we've all heard you know typically it's the Alonso's of the world or the bells where they say something that sounds so intelligent from the car given everything that they're taken in and it's really impressive what they can do and all of you know what they need to remember and but then I think they respect for us in a different way in terms of the challenges that we face so I think there is a mutual understanding

there and yeah yeah I'm sure I'm sure there is at Jacob would like to know if you've got any bold predictions for the future of F1 and could that could be either driver-based or on the sport itself and I think I'd love to see we're getting that direction but we're really pushing the sustainable fuels and I think that F1 in the past has been really good at leading the way in technology and you know this is my mechanical engineering background I want to see the technology

develop so I think we need to be careful between the resource restriction and the budget cap and actually still developing cotton-edge technologies so if we can push the sustainable fuel the biofuels to a point where we're not using fossil fuels anymore you know overnight you can imagine it solves a whole crisis that we have in the world of not needing to change our cars because we can run them on green fuel and so that's what I'd love I'd love to see us move in that direction rather than the electrical direction love to see us say like how do we make this engine green and that's one thing I'd like to see and yeah and just those continuous the technology is the bit that really interests me you know the engineer inside of it so what we can do in those developments is really interesting yeah F1 has always been a leader hasn't it yeah in technology Yvonne would like to know are you proud of what happened to Aston Martin and do you regret not being part of this year's success I guess it's quite interesting because obviously you know last year wasn't as successful as I'm sure the team would have hoped but this year we're seeing Alonso and Lance absolutely killing it aren't we yeah it feels like from my left the team has just been off and off like the end of last year was really good as well and so it's really obviously you would love to be there as a strategist when you're getting you know they've had three podiums from three so far so yes of course it would be lovely to be there it would be lovely to do that but wow I'm so happy for those guys you know that team has gone through so much you know a lot of

people have been there for 20 plus years their whole lives working through the not having enough money not having the resources not having the upgrades not having the factory and I was you know I help and design the new mission controller the new factory and you think wow this is going to be so fantastic compared to what they currently have I'm still always say we but what they currently had

and so I'm just so happy that it's coming together you know so many people have put in so much work the whole race team there worked tirelessly over the last few years and there's loads of examples of people in the factory that have never really had a car that's going to see this success that they're going to see this year and so I'm really happy for them and it was really lovely being there in Canada with Sky because you could speak to everyone it was like first day back at school you caught up with everyone in the pit lane and so yeah those guys are going to have

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a

really good year and I'm really excited to see where it goes I'm really happy you know for Lance and Lawrence the work they've put in to get that team where it is and and you know Lance is really driving it with Alonzo so I think it's going to be a really good year for their excited to see where they can they can bring it could you could you feel that last year you know as you were leaving

the team could you feel that big things and good things were coming I think that you've had so many years of hoping the next year is going to be the next big thing and we don't get me wrong we've had years of the cars been pretty good it's been the fourth fastest car or whatever I didn't really when I left in the short time get the sense that it was going to be the massive step that it was and you know maybe others didn't tell you there's been a lot of talk of you know I felt would have done the same thing as well but I didn't I don't think the team even were really sure that it was going to be the massive step and that's the problem with F1 you do all of this development but you don't know what the others are bringing to the fore as well so I wasn't obviously the new factory the new wind tunnel I could see it was clear that in a few years time the team would be very good I just didn't think it would be this year but I don't think that would have changed my decisions because my reasons for leaving weren't because the car was doing wasn't doing good and weren't because they didn't love the team I did truly love working with the team so it's still you know the calendar the work-life balance that wasn't going to change and yes for sure it's easier to stick it out when you're on the podium every weekend so yeah I'm really happy for those guys yeah yeah we move on to Bakke next where you're going to be with us with with SkyF1 was that a race you look forward to as an engineer well yeah for several reasons um Force India always did reasonably well

in Bakke so we had a number of podiums ours it was always a very happy hunting ground um I enjoy really enjoy the city I enjoy the street circuit it's really interesting dynamic of like the old time at the castle and then the big long streets at the end so narrow at points around the castle exactly it was one that was a new event um you know in recent years so there was always somewhere interesting to go in the city or somewhere you know a very interesting culture there as well um I love races it's very selfish engineer and point of view but I love races where you can walk in and out to the track because you can have this sort of moment of calmness walking

in and out on your own time at your own speed you get a feel for the wind conditions the ambient all these things around you so I did really enjoy it often as an event so I thought I thought it was really lovely say well Benny thank you very much for your time really appreciate it we've got Gunter Steiner joining us on next week's podcast so if you haven't seen the post on twitter get your questions in for him he'll be joining us but until then bye for now