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Short hair used to be a symbol of female emancipation. Why do all young women now try to look like Rapunzel?

India Knight



Girls don't have short hair any more. It's the oddest thing. When I was a child, over half the girls in my school had short hair.

When I became a teenager, the numbers went up — it was the Eighties and everyone's hair was short, gelled and spiked upwards. The few girls who had longer hair backcombed it and crimped it to death: Bananarama by way of Kate Bush, and certainly never anything Rapunzel-like.

Even when extensions came along, they were dreadlock-like. There was no such thing as long, glossy hair in the general mainstream: not on pop stars, not on actresses, not on cool girls you saw walking down the street. It would have seemed incredibly old-fashioned. In those post-punk days, nobody was interested in looking winsomely pretty, and besides, the prettiest people were often androgynous (not a word you hear much now. Androgyny was sexy and a bit dangerous; I find "gender fluid" markedly less so).

Early Madonna had short hair, more often than not. When it was long it was tangled and raggedy, as if she'd slept in it. Peak Madonna, thrumming with sexuality and power — the pointy-bra piercing through the pinstripe suit, the monocle, Express Yourself, Vogue — was short-haired. Short hair is sexy and liberated: that was the message.

My 13-year-old daughter has hair just past her shoulders — the shortest of any of her friends, all of whom have (lovely) manes cascading down their backs. I became slightly obsessed with this recently and asked everyone I knew under the age of 21 if they'd ever had short hair, and they all said the same thing — they'd had very long hair as long as they could remember. One, aged 21, said there had been two girls at her school who had short hair, "but they were super-confident". Apparently, short hair made boys question your sexuality, and you had to have the confidence to bat away their remarks.

Long princess hair is also, of course, long porn hair. And this is why the whole thing is so strange. Of course little girls want lovely princess hair:



they always have. But they used to want to experiment with it, too, as they got older — to chop it off to see what it looked like, to test a few boundaries, to find their own style. Mermaid hair was a thing you outgrew. Now it's as though it is sacred, and girls are more likely to cut their arms than their locks.

It's a bit creepy, isn't it? We're meant to be past this. Short hair has always been a symbol of emancipation. In the 1920s, bobbed hair caused a sensation. Respectable women had had very long, heavy hair for centuries. It symbolised femininity and gentleness. Chopping it to nape length was outrageous, and the woman courageous enough to bob her hair was considered wildly disreputable and louche. Vidal Sassoon revived bobs in the 1960s. But think

also of land girls in the 1940s, or Ava Gardner and Katharine Hepburn: cool, strong, capable women usually had short hair, whether they were Marilyn Monroe or Twiggy. And now, zip — which is why the boyish crop of a Cara Delevingne, or an Adwoa Aboah, is so startling in today's context.

I've nothing against long hair, it looks very pretty — though with my beauty-column hat on I'd point out that not everyone can carry it off: some faces work better with a bobbed frame around them. But this isn't about the pros and cons of short v long hair. It's about how young women feel they should look, and the answer in 2017 is: hyperfeminine at all times.

The wheel has turned in the other direction too. There used to exist an absurd diktat about how women shouldn't have long hair after the age of 40. This is now happily ignored. I am entirely in favour of women having the hair they feel like having: I am not the hair police. But it is strange, this increasingly widespread reluctance (fear?) to step outside the Disney/porno definitions of what an attractive woman should look like. I don't like it ■ @indiaknight

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“I’ve seen The Handmaid’s Tale discussed online as a ‘how to’ book” Margaret Atwood

Novelist, environmentalist, futurologist

THE
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INTERVIEW
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“Shall I give you my disapproving look?” asks Margaret Atwood, bestselling novelist, human-rights campaigner, author of the futuristic *The Handmaid’s Tale*, which became prime Sunday-night viewing on television last year. *The Handmaid’s Tale* is chock-full of disapproval, mostly by Puritan men of women who dare to think for themselves. And so, too, is *Alias Grace*, which screens on Netflix this Friday, about a woman accused of murder.

Atwood has a cameo in the series, based on her 1996 book of the same name. “I play the Disapproving Woman,” she says, swirling her shawl coquettishly. She narrows her blue eyes at me and frowns — though the effect is somewhat undermined by her mouth twitching in amusement. Is it a speaking part? She chuckles gleefully. “Well, I hiss.”

Atwood is surprisingly jolly for someone who writes gripping tales of oppression, torture and environmental catastrophe — and even anorexia (although she says she did not know about the disease when she wrote *The Edible Woman*, her first novel, about a woman who stops eating). When she finds out that I studied at Harvard, she whispers conspiratorially: “Did you notice that I put the Secret Service of Gilead (the baddies in *The Handmaid’s Tale*) into the Widener Library?” Widener is the Harvard equivalent of the Bodleian Library in Oxford: Atwood went there to research the Salem witch trials. It’s a pretty solemn place, and Atwood’s aquiline face lights up with childish mischief at having pulled off this coup.

A birdlike figure with a mass of tight grey curls, who speaks in a torrent and growls at the waiter for more coffee, Atwood seems totally incongruous in the sleepy oasis of the Royal Over-Seas League in Green Park, London, where we meet. Yet it turns out this is where she always stays when in the capital; has done, in fact, for 30 years. I never thought of you as being fond of

Empire, I say. “I’m Canadian,” she responds earnestly. “I’m a colonial. The Queen is our head. If she wasn’t, we’d have to have a president like the US, and look what’s happening with that.”

The ascent of Donald Trump, coinciding with the adaptation of *The Handmaid’s Tale* for TV, has catapulted Atwood from very significant to properly famous. Her story of sexual slavery in a future America ruled by the Christian right, where pollution has left most women barren and the others are forced into reproduction, has struck a chord. Women dressed as handmaids, wearing red dresses and white bonnets, have sat silently in state capitals across America to protest against Trump’s cuts to abortion clinics. Others, outraged by the president’s sexist remarks, have marched with banners reading “Make Atwood fiction again”. While Atwood has been careful not to call herself a feminist — she is very precise about the terms she uses and prefers to talk about human rights — she is clearly pleased with the impact, if sometimes a little surprised.

Unlike *The Handmaid’s Tale*, which depicts a dystopian future, *Alias Grace* is a historical whodunnit. It is based on the writer’s meticulous research about a woman accused of murder in 1840s Canada. But both books are about the oppression of women, and both TV series feature women wearing modesty bonnets — those big, stiff affairs, like lampshades, that were worn at the height of Victorian prudishness.

“I think you’ve become the Bonnet Queen,” I tell her. She laughs, pleased. “Have you seen the Vera Wang fashion shoot in *Vogue*?” she asks, picking up her phone to show me. “It’s ‘an homage’” — she drawls the word sardonically in a French accent, raising her eyebrows — “to *Handmaid’s Tale*.” She starts flipping through the slideshow, peering at the dresses. “These are works of art. Aesthetically attractive in a creepy, totalitarian way.” ➤➤➤

PHOTOGRAPH
ANNA HUIX

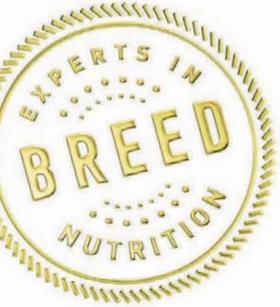


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LEADING LADIES
Elisabeth Moss as
June Osborne in
*The Handmaid's
Tale*. Far right: Sarah
Gadon as Grace
Marks in *Alias Grace*



How does that make you feel? “Weird,” she says immediately. “But these days, everything makes me feel weird. Weird is the way I feel.”

Does she feel weird about having 1.6m followers on Twitter at the age of 77? “1.75,” she fires back, looking at me sharply from under her brows. Then, softening: “A lot of them are robots. You know they are robots when they send you a message saying, ‘I miss your great big dick’ — then you know that they don’t know who you are. But they seem to have realised I’m not ever going to click on that.”

She never set out to be on social media. “I got into it by mistake, like so many things in life.” She started blogging in 2009 to promote a musical version of *Year of the Flood*, her second novel about survivors of a biological catastrophe (the first was *Oryx and Crake*, with its unforgettable marooned protagonist, Snowman). “They said, ‘You will need a Twitter feed.’ I said, ‘Will I?’ I had to kick off two people who weren’t me, who were already pretending to be me. The only way you can stop people pretending to be you is to do it yourself.”

As a veteran blogger in the era of fake news, does she think social media is a force for good? “No. It’s a human tool. And like all other human tools, it has a good, a bad or a stupid side you didn’t anticipate. The internet, when it started, was these idealistic scientists who wanted to share their research. Did they think it would be deluged with spam and porn? No. They didn’t anticipate that. Nobody anticipated with Twitter that it would be used to warp elections.”

She knows my next appointment is appearing on a TV politics show, and she asks if I get nasty comments on Twitter. I say that I do, and it seems to hurt more than the letters we journalists all used to get 10 years ago. “Often these things get going with pieces of information that aren’t true,” she says. “This mob witch-burning takes place.”

What should we do about it? “Am I God?” she asks, wide-eyed, mocking. “You can’t say it’s necessarily the fault of technology. You might say that it’s an

overenthusiasm about the good parts of human nature and an underestimation of the bad parts. “This will be so wonderful” — she claps her hands — “everybody will be able to express themselves. ‘Uh-oh, they’re expressing themselves. Stop expressing yourself, now! It is a big debate. You have to be pretty careful about how they want things shut down. You can be shut down; you will be the next to be shut down.”

Many of Atwood’s best-known works deal with the slippery nature of truth: how institutions and societies can warp the truth, and how we humans are not always honest with ourselves. *Alias Grace* is the story of a supposed murderess whose own reticence, in the face of a society high on moral outrage, scuppered all attempts to discover whether she was innocent or guilty.

Grace Marks was a notorious figure in 1840s Canada. She was jailed after the murders of Nancy Montgomery and Thomas Kinnear, in whose house she was a servant. James McDermott, a stable boy, was hanged for the murders and Grace sentenced to life imprisonment. Marks and McDermott each gave more than one version of events — McDermott accused Marks moments before he was executed.

I say to Atwood that *Alias Grace* is one of the most perplexing books I’ve ever read, a whodunnit that is unresolved. “If everybody had known that she had done it, it wouldn’t have been of interest,” Atwood says. “It would just be another true crime. You used to get those things at British railway stations, which I quite adored — I don’t know whether they have them any more, true crimes. They were [stories of] crimes people had got caught doing, so they were usually quite stupid. They left all these clues lying around. You know, they put Granny in the freezer wrapped up in baggies — someone was bound to find her.” She goes on to virtually collapse in gales of laughter telling me some of the other stories.

Does she think Grace did it? “I don’t know,” she says. “I’ve looked at all of it in minute detail. Of course it is like everything else, crimes that involve a man and a woman, it usually goes this way: that the man dunnit and the woman is either the demonic instigator of everything or innocent, terrified and threatened with death, a victimised person. She was barely 16.”

For years, Grace claimed not to have been able to remember what happened. But Atwood introduces a fictional psychiatrist, the handsome Dr Simon Jordan, played by Edward Holcroft, whose visits to Grace in prison begin to unlock her past. ➤➤➤

“Often things get going on Twitter with pieces of information that aren’t true. This mob witch-burning takes place”

FINDING HER VOICE Atwood in 1972, three years after she published her first novel, *The Edible Woman*

The tension between the two characters is compelling and the programmes are shot with long, lingering close-ups, which lets you focus on their emotions. Sarah Gadon puts in a powerful performance as Grace, an Irish immigrant who is at times naive, at other times shrewd. “Murderess is a strong word to have attached to you. Murderer is merely brutal,” Grace says at the start of the first episode. “I’d rather be a murderess than a murderer, if those are the only choices.”

These and other elliptical utterances make Grace Marks a puzzle. Atwood emphasises this with the theme of quilting. Marks was a good seamstress and there are many scenes that involve women quietly sewing. Atwood becomes incredibly animated talking about Victorian quilt patterns, explaining that the culture of young girls revolved around them. She watched quilting as a child, because her paternal grandparents lived on a farm in rural Nova Scotia, “which didn’t get electricity until the early Sixties”. All the spare bits of material were made into quilts or rugs. “You didn’t throw out anything,” she says approvingly.

Atwood clearly admires Marks’s intelligence, and dignity, during a life that was largely one of poverty and humiliation. After the book was published, researchers found the Leavings Letter, a questionnaire about prison life filled in by those being released. “There were about 32 questions, like, ‘How was the food?’ and ‘Did you learn any skill that would be assistance to you?’ And Grace answered ‘Dubious,’” Atwood says. “Then came the killer question and I thought, ‘This is it, she’s going to tell.’ It was: ‘To what do you attribute your incarceration in this institution?’ Her answer was a masterpiece of evasion. She said, ‘Having been employed in the same household as a villain.’ And there was her signature, very contained, not giving anything away. And that is what we know.”

What does she want people to take away from *Alias Grace*? “I never have such wants. Readers are individual. As for what is the moral of this story — that isn’t how fiction works.” Really? *The Handmaid’s Tale* is surely a morality play. “But there isn’t just one moral of the story. I have seen that book discussed in online forums as a how-to book.”

I feel slightly cheated by not knowing how to respond to *Alias Grace*, not knowing whose side to be on. “This was a notorious story at the time. People used Grace as a screen upon which they projected their feelings about women, about Irish people and the serving class.”

Class, Atwood believes, is a vital undercurrent in modern America that helped Trump to power. “The way class works in America is that a middle-class, reasonably affluent black person will look down upon a white-trash person.” But that’s been true for decades. “Yes. But the white-trash people have now self-identified and they are kind of tired of being those

“Consider the options. They impeach Trump, he goes away, then you get Mike Pence, a more efficient totalitarian”



people, they are tired of being a ‘basket of deplorables’, which was a very stupid thing for Ms Clinton to have said.” Atwood lays a sardonic emphasis on the “Mizz”.

Then she says something that seems to me to go to the heart of much of her writing: “I don’t think you can ever really understand these things unless you’re willing to admit that some people have a point of view that makes sense to them, considering how they feel they have been treated.”

What does she think is Trump’s appeal? “He acts as if he sees them,” she says. “He doesn’t care, about them or anybody else. He was quite willing to sign a healthcare law that would have excluded those very people. But he acts as if he sees them.”

Do Trump’s fading poll ratings give her any hope? She disputes my description. “They hover,” she says, gesturing for me to turn my notebook around so she can draw a graph of the polls with my pen. “They hover between approval of 40 and 34,” she says, drawing furiously. “Disapproval between 61 and 55.”

But this kind of rating is almost unprecedented this early in a presidency — it’s surely significant. “That is what they say, they’ve never seen anything like it before, but they’ve never seen anything like this stuff anyway,” she says, seriously. “So, consider the options. They impeach Trump, he goes away, then you get Mike Pence, a more efficient totalitarian,” she chuckles drily.

Did she ever think about going into politics herself? She looks stunned. “I would be a terrible politician. Let me count the ways. I’ve always been from Mars.”

I suppose, I say, you’d hate to compromise. “Oh, I don’t mind compromise,” she says, surprisingly. “I’m a Canadian. That’s what we do. There’s a joke about a bunch of people on the road to heaven. There’s a fork in the road with one way marked ‘To heaven’ and the other marked ‘To panel discussion on heaven’. All the Canadians,” she grins, “choose the panel discussion.”

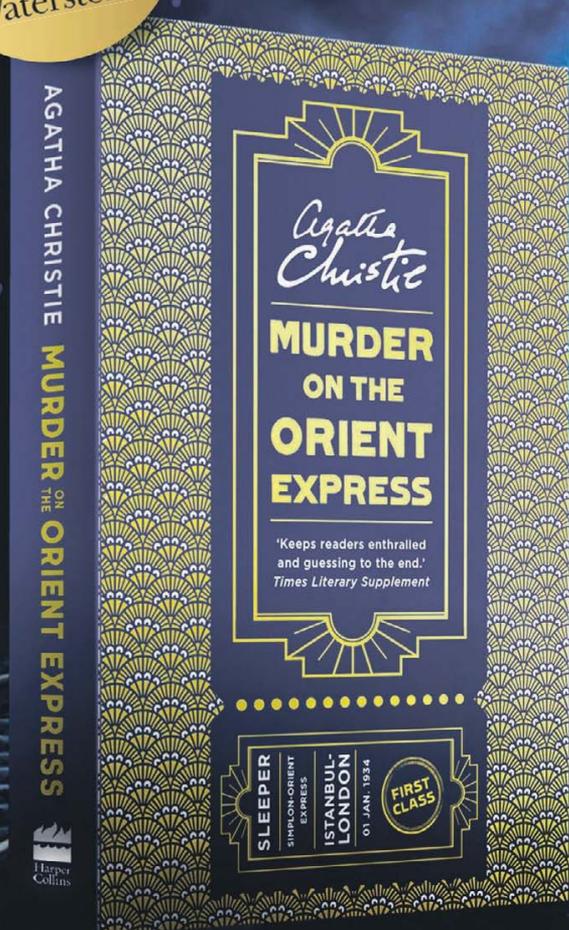
It’s a good joke, though I find it hard to imagine Margaret Atwood compromising. But perhaps age is softening her. “I’m really old,” she keeps protesting. “I know you think I’m not, but I am.” She admits she has had problems sleeping lately, after knee trouble brought on by what she ruefully calls “a baby and staircase-related episode”. But she is just as energetic at the end of our interview as at the beginning. She is off to the Sheldonian Theatre in Oxford to do “a dog-and-pony show — no, I shouldn’t say that — it’s only the dog”. And, with a dry laugh, she bounces out ■

A new hardback edition of Alias Grace by Margaret Atwood is out on Thursday (Bloomsbury £17). Alias Grace is on Netflix UK from Friday

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SETTLING THE SCORE Khalil came from an influential family who fled Raqqa. He sought vengeance when Isis beheaded a relative



REVENGE OF THE LOST BOYS OF RAQQA



As the Isis stronghold in northern Syria falls, *Louise Callaghan* tells the remarkable story of the displaced teens who returned to liberate their home city. Photographs by *John Beck*

CONCRETE JUNGLE Fisherman's son Bashar was forced to remain in Raqqa for three months and came to dread the Briton 'Jihadi John'

The boy from Raqqa sat on a balcony smoking a cigarette, legs dangling between the railing over the door that led to the front line. His gun, which was covered in homemade stickers, leant against the wall. After a few minutes, he heard his friends call and jumped down to join them.

The boy, Bashar, ran into what had once been a living room, an empty shell not far from his parents' old house on the outskirts of the city. His friends Khalil and Abdullah, also in the Tel Abyad brigade, were inside, giggling nervously as they waited to attack the Isis positions on the far side of the house. They all told me they were 18, but they looked far younger.



"FIGHTING FOR YOUR OWN CITY, YOU ARE STRONGER. IT'S A HOLY THING FOR YOU"

There was a crash, and Bashar's marble skin turned whiter. His hair stood on end, thick with the dust that filled the air. For a moment, he stood still. Then came a burst of gunfire and the boys barrelled through the house to fight.

For seven weeks this summer, they had been inching forward in a hard, slow battle to retake their home city, the capital of the so-called caliphate that had been under Isis control for three years. They were three among a vast flock of local boys — teen soldiers who appeared on the front, armed, barely trained, but hungry for a fight, as the fall of Raqqa began. On the day I met Bashar, Khalil and Abdullah, the western side of the offensive seemed populated with the city's displaced teenagers. The boys were looking for one thing: revenge.

The caliphate was finally disintegrating like a handful of dust. But the fiercest battles were yet to come. Each day, Isis fighters popped up from tunnels around the city, appearing behind the lines to launch suicide attacks. Their leaders, with extensive experience as Chechen rebels, Bosnian warlords or Iraqi Ba'athist commanders, had used the years of the caliphate's rule to prepare for its collapse. They had built bomb factories, minefields and acquired fleets of drones — the kind British dads get for Christmas. That day, three Isis bomb cars had attacked this section of the front line, and mortars crashed close to where the boys were holed up. Later, a sniper stalked their path back to the base.

In the gutted room 300ft from the front line, the three boys pinged around restlessly — kicking pieces of rubble and shoving each other in the ribs until they were told by a commander to sit down, which they did immediately. Despite months at the front, Bashar and Abdullah still jumped at loud noises. But Khalil was quiet and still, smiling calmly at the others' jokes while his gun rested against his knee.

The boys were a strange blend of nerves and fearlessness: brave to the point of suicide, but skittish and careless. None of the units seemed to have had much military training. Their comrades milled around on the street behind the front line, chatting listlessly and oblivious to the danger from the mortars that landed regularly nearby. Though they were undisciplined and erratic, they knew what they were fighting.

"My friends who stayed, Isis tried to get them to join them," said Bashar, trying on a pair of gold-rimmed Aviators. "They didn't join. But Isis gave them drugs and needles. They got addicted. Then some of them lost their minds. That's when they ask them to drive suicide cars."

The week before, one of his friends — flying on tramadol, an opioid painkiller favoured by Isis fighters — had driven a kamikaze vehicle packed with explosives to the front lines, only to park it and get out to surrender. Isis beheaded two of his brothers in revenge. Now, Bashar said, he fired at Isis fighters when he saw them and was never scared.

As he searched for words, the teenager absent-mindedly picked up part of a broken table leg and threw it to the other side of the room. It crashed into a pile of rubble. "Sorry," he muttered. The other boys laughed.

One of their friends — chubby, with a clownish smile — waved a toy water pistol in their direction and they all giggled helplessly.

The group the boys belonged to, Liwa al-Tel Abyad, had originally been formed to retake an Isis-occupied city 60 miles to the north. Now they fought under the umbrella of the American-backed SDF, a Kurdish-majority group of militias created around the backbone of the People's Protection Units (YPG) that have been tasked with wiping Isis from northern Syria.

The three boys were Arab, not Kurdish, but the distinction didn't matter much to them. One by one, they lined up to join. They were bloodthirsty teenagers, scared and brave, seeking vengeance.

Bashar and Khalil were city kids, from the centre of Raqqa. Khalil came from a prominent family and went to school every day. Bashar worked with his fisherman father, casting his nets into the rushing brown waters of the Tigris. He knew the names of the fish and the right time to catch them. Abdullah came from a nearby village banked by thick green fields.

When Isis arrived at the city in 2013, Khalil fled north with his family. Bashar stayed. He was the only child of a poor family, and they had nowhere to go. The streets of the city, which had teemed with life, became quiet and dangerous, filled with fighters with long beards and outlandish accents. Some of them were white and couldn't speak Arabic.

LAST STAND From top: An SDF fighter watches a coalition airstrike on Isis positions in western Raqqa, the side of the city populated by many teenage fighters; a nearby area seen through the windscreen of a coalition Humvee; SDF forces scan the skies for Isis drones

Raqqawis grew to fear an Englishman known as John, whose cruelty had become legend. Bashar knew that he'd been the one who beheaded journalists in the hills outside Raqqa. He knew he was the one who killed the men whose bodies were displayed in the city's central square.

One of them was a local vegetable seller, who they said had crossed God. John had stabbed him until he bled out, and hauled his body up on a crucifix.

"Everyone knew John," said Bashar, voice rasping with a tiredness that had turned his face cream. "He was famous. They were afraid of him."

He didn't know that the militant's real name was Mohammed Emwazi, who'd been nicknamed John by his hostages — he was part of a four-person cell with English accents, known as the Beatles. Neither did he know that the failed rapper from Notting Hill had become infamous as Jihadi John in the West for his part in gruesome Isis propaganda videos.

After three months, Bashar's family fled north. The lines that divided Isis territory from rebels fighting the Syrian regime forces were still porous, and leaving the caliphate was discouraged rather than banned. His friends, his uncles and cousins stayed put, unwilling to risk losing their houses to the militants. Soon, they thought, the violent foreigners would leave and things would get back to normal. But instead the group grew stronger, its ranks filling with fanatics, deadbeats and petty criminals from across the world. The desert city became internationally renowned for terror and violence.

Videos broadcast by Isis showed a happy, prosperous city — with tarmac roads replacing the rutted thoroughfares and children swimming in the river where Bashar had fished. But soon the caliphate began to come apart. Electricity was intermittent

"THEY'LL BEHEAD YOU FOR ANYTHING," SAID HUSSEIN. ISIS SAWED OFF HIS HAND

and the water was cut off. Mobile networks were patchy and it became harder for him to talk to friends who had stayed inside.

Some news did filter out: two of Bashar's cousins were beheaded for selling cigarettes. Safe with his family in Turkey, the teenager became impatient for revenge. So he joined the SDF, who gave him a gun and sent him to fight. His parents begged him not to go, but he went anyway.

In between spells on the front line, he made stickers that he taped onto the wooden stock of his aged Kalashnikov. One showed two orange doves with a red heart drawn between them. The other, written in blue cursive, said Happy Love Memories in impeccably spelt English, which he did not speak.



Sixty miles away, outside Tel Abyad, Khalil grew restless in his extended family's second home. When news came that Isis had beheaded one of his relatives in Raqqa, the men of his tribe called a war council. Back home, they had held considerable sway and considered Isis foreign invaders.

Now the revenge was personal. Old and young gathered their weapons, formed a militia and pledged to fight under the SDF. Khalil, a serious teenager with skin burnt mahogany by the desert sun, joined them.

"Three of my uncles have been martyred now, and two of my cousins," he said calmly, as the black strands from his scarf blew across his forehead.

In a small village outside the city, Abdullhah was becoming desperate. He was stuck inside while Isis fighters held absolute sway on the streets of his quiet hamlet. As the days went by, his hate grew, and his family went hungry. Trade with the outside world had stopped and they lived off their crops.

He left, with the blessing of his family, and joined the SDF. As they fought for the cities of Tel Abyad, Manbij and Tabqa, the boys from Raqqa bided their time. Soon, they knew, their turn would come.

Rostam al-Halep, a western-front SDF commander in Raqqa, has a theory about his men. "When you're fighting for your own city, you are stronger. It is a holy thing for you," said the bearish soldier, reclining on a floral mattress in the ➤➤➤

INTO THE FRAY Abdullah was trapped in his Isis-held village outside Raqqa, but left with his family's blessing to join the coalition assault

guttled building that the fighters of the western front used as a base. For Raqqa, it was a high-rise — five floors of breeze blocks held together with cigarette butts and a smear of mortar. From the western side, the view stretched out over suburbs and green fields. It was golden hour, and the soldiers sat in silence watching the heavy red sun set through a missing wall.

The eastern side of the building was pockmarked with bullet holes, shaded with sniper curtains made from bedsheets. Drifts of plastic water bottles banked rooms dotted with piles of human excrement. A scrawny kitten napped on a plastic bag.

Ahead rose Raqqa: miles of squat beige houses that tapered upwards to the taller buildings of the city centre.

When they returned from the front, the boys from Raqqa slept crowded together on floor mats, out of sight of the Isis drones that occasionally whirred overhead.

The foundation for the SDF, the militia called the YPG, fights for Kurdish autonomy in northern Syria. Commander Halep was a dyed-in-the wool member, and believed that making their



“ISIS GAVE THEM DRUGS. THEN THEY ASKED THEM TO DRIVE SUICIDE CARS”

name as the West's most reliable ally against Isis would help their quest for self-rule. But Halep was a realist. He led forces peppered with Kurds, Arabs, Assyrians and Yazidis who had joined up out of hatred for Isis. And, like any good commander, he knew the right time to unleash them.

When the battle for Raqqa began, he let the local boys flock to the front. Several forces within the SDF are known to have forcibly recruited child soldiers. But the boys from Raqqa were not among them: they ached to kill, and knew they had been wronged. The boys were aware that although they were retaking the city, they could never get their lives back. They would have to destroy Raqqa in order to save it.

By September, when the summer heat had cooled a little and the SDF had advanced into the city centre, Raqqa was a ghost town. The scale of the military campaign had left the city a mess of cored-out cement buildings, broken glass and wire.

There were no civilians in the streets. Most of the buildings were clogged with mines hidden in doorways, under floorboards and in children's toys. None of the houses were intact. The horizon was a yellow dust cloud smothering endless ruined buildings.

In August, the coalition, of which Britain is a part, dropped more than 5,000 bombs on the city. Between them, Isis, the SDF and the coalition had salted the earth of Raqqa. It had become a town for the dead, and even the soldiers felt the living had no place there.

One afternoon this summer, in a sweltering tent near the town of Ain Issa, 35 miles from Raqqa, Abdullah Sabr Hussein held out a crude prosthetic hand for me to shake, and laughed. The wild-eyed sanitation worker had arrived with his wife and four children at the camp for displaced persons 48 hours earlier.

They had walked for three days from al-Mayadeen, 150 miles away, through minefields and flat desert with sand that burnt their feet. On the fourth day, half-dead with thirst, they had hitched a ride to safety.

Hussein confirmed what many have claimed: that Isis fighters and civilians had fled from the areas around Raqqa in recent months to territories controlled by Isis further east. Foreign fighters, including Britons, and Isis leaders are rumoured to have sought safety in Mayadeen.

But even there, anarchy reigned, as the last spasms of the caliphate devolved into blood and chaos. This month, the Syrian army claimed to have retaken Mayadeen from Isis. The towns and districts nearby would be the next battle for the boys from Raqqa.

“They’ll behead you for anything,” said Hussein. Isis sawed off his right hand when he was accused of stealing a motorbike, and the stump burnt rancid in the sun. “If you leave your house, you don’t know if you’ll come back alive.”

Yet many civilians were too frightened to flee. The road was dangerous and Isis had spread rumours of mass executions of Arabs at the hands of the YPG.

Outside the tent where Hussein’s family slept was a pick-up truck carrying a dozen recent arrivals from Raqqa. The children looked as if they were wearing lipstick, clownish against their dusty white skin and sunburnt noses. But the red stains were blood, which was leaking from their diseased gums.

“We weren’t afraid of the YPG,” said Umm Aya, their mother, crushed into the back of the truck. “We were starving in Raqqa. We had to go.”

The SDF recently announced the liberation of the city after a four-month campaign. But amid the rubble, a handful of militants were still holed up in gutted buildings, pledging to fight to the death.

In the ruined building by the front line, the boys of Raqqa were preparing to fight again. As they gathered their things, a Toyota Hilux pulled up outside, carrying a crowd of ululating SDF fighters. Ignoring the threat from drones, the men hauled out blocks of ice from the back and began delivering them to fighters inside the flats. Music blared loud enough to infuriate the Isis fighters hiding out a few streets away.

The boys laughed until they were bent over and hiccuping. Then they picked up their guns and ran back to the front line, up the sniper alley and towards their city.

They fought well. This month, as the news started to filter out that liberation had been declared, loudspeakers urged the remaining residents to come out for hot soup. Boys from Raqqa, and from other Isis strongholds, fired their guns into the air and ululated. Their revenge had come ■

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Facebook is watching you

We think it's a harmless way to stay in touch with friends. The truth is far more destructive. Award-winning writer *John Lanchester* investigates how Mark Zuckerberg's Harvard jape grew into the biggest surveillance enterprise in the history of mankind

A

At the end of June, Mark Zuckerberg announced that Facebook had hit a new level: 2bn monthly active users. That number, the company's preferred "metric" when measuring its own size, means 2bn different people used Facebook in the preceding month. It is hard to grasp just how extraordinary that is. Bear in mind that thefacebook — its original name — was launched exclusively for Harvard students in 2004. No human enterprise, no new technology or utility or service, has ever been adopted so widely so quickly. The speed of uptake far exceeds that of the internet itself, let alone ancient technologies such as television, cinema or radio.

Also amazing: as Facebook has grown, its users' reliance on it has also grown. The increase in numbers is not, as one might expect, accompanied by a lower level of engagement. More does not mean worse — or worse, at least, from Facebook's point of view. On the contrary. In the far distant days of October 2012, when Facebook hit 1bn users, 55% of them were using it every day. At 2bn, 66% are. Its user base is growing at 17% a year — which you'd have thought impossible for a business already so enormous. Facebook's biggest rival for logged-in users is YouTube, owned by its deadly rival Alphabet (the company formerly known as Google), in second place with 1.5bn monthly users. Three of the next four biggest apps, or services, or whatever one wants to call them, are WhatsApp, Messenger and Instagram, with 1.2bn, 1.2bn, and 700m users respectively. Those three entities have something in common: they are all owned by Facebook. No wonder the company is the fourth most valuable in the world, with a market capitalisation of \$505bn.

Zuckerberg's news about Facebook's size came with an announcement that may or may not prove to be significant. He said that the company was changing its "mission statement", its version of the canting pieties beloved of corporate America. Facebook's mission used to be "making the world more open and connected".

A non-Facebooker reading that is likely to ask: why? Connection is presented as an end in itself, an inherently and automatically good thing. Is it, though? Flaubert was sceptical about trains because he thought (in Julian Barnes's paraphrase) that "the railway would merely permit more people to move about, meet and be stupid together". You don't have to be as misanthropic as Flaubert to wonder if something similar isn't true about connecting people on Facebook. For instance, Facebook is generally agreed to have played a big, perhaps even a crucial, role in the election of Donald Trump. The benefit to humanity is not clear. This thought, or something like it, seems to have occurred to Zuckerberg, because the new mission statement spells out a reason for all this connectedness. It says that the new mission is to "give people the power to build community and bring the world closer together".

Hmm. Alphabet's mission statement, "to organise the world's information and make it universally accessible and useful", came accompanied by the maxim "Don't be evil", which has been the source of a lot of ridicule: Steve Jobs called it "bullshit". Which it is, but it isn't only bullshit. Plenty of companies, indeed entire industries, base their business model on being evil. This is especially an issue in the world of the internet. Internet companies are working in a field that is poorly understood by customers and regulators. The stuff they're doing, if they're any good at all, is by definition new. In that overlapping area of novelty and ignorance and unregulation, it's well worth reminding employees not to be evil, because if the company succeeds and grows, plenty of chances to be evil are going to come along.

Google and Facebook have both been walking this line from the beginning. Their styles of doing so are different. An internet entrepreneur I know has had dealings with both companies. "YouTube knows they have lots of dirty things going on and are keen to try and do some good to alleviate



WAVE OF SUCCESS Facebook's Mark Zuckerberg — he knows where you live

it," he told me. I asked what he meant by "dirty". "Terrorist and extremist content, stolen content, copyright violations. That kind of thing. But Google, in my experience, knows that there are ambiguities, moral doubts, around some of what they do, and at least they try to think about it. Facebook just doesn't care. When you're in a room with them you can tell. They're" — he took a moment to find the right word — "scuzzy."

That might sound harsh. There have, however, been ethical problems and ambiguities about Facebook since the moment of its creation. The scene is as it was recounted in *The Social Network*, Aaron Sorkin's movie about the birth of Facebook. While in his first year at Harvard, Zuckerberg suffered a romantic rebuff. Who wouldn't respond to this by creating a website where undergraduates' pictures are placed side by side so that users of the site can vote for the one they find more attractive?

Jesse Eisenberg's brilliant portrait of Zuckerberg in *The Social Network* is misleading, as Antonio Garcia Martinez, a former Facebook manager, argues in *Chaos Monkeys*, his entertainingly caustic book about his time at the company. The movie Zuckerberg is a highly credible character, a computer genius located somewhere on the

autistic spectrum with minimal to non-existent social skills. But that's not what the man is really like. In real life, Zuckerberg was studying for a degree with a double

concentration in computer science and — this is the part people tend to forget — psychology. People on the spectrum have a limited sense of how other people's minds work; they lack a "theory of mind", it has been said. Zuckerberg, not so much. He is very well aware of how people's minds work and, in particular, of the social dynamics of popularity and status. The initial launch of Facebook was limited to people with a



Harvard email address; the intention was to make access to the site seem exclusive and aspirational. (And also to control site traffic so that the servers never went down. Psychology and computer science, hand in hand.) Then it was extended to other elite campuses in the US. When it launched in the UK, it was limited to Oxbridge and the LSE. The idea was that people wanted to look at what other people like them were doing, to see their social networks, to compare, to boast and show off, to give full rein to every moment of longing and envy, to keep their noses pressed against the sweet-shop window of others' lives.

This focus attracted the attention of Facebook's first external investor, the now notorious Silicon Valley billionaire Peter Thiel. Again, The Social Network gets it right: Thiel's \$500,000 investment in 2004 was crucial to the success of the company. But there was a particular reason Facebook caught Thiel's eye, rooted in a byway of intellectual history. In the course of his studies at Stanford — he majored in philosophy — Thiel became interested in the work of the US-based French philosopher René Girard. Girard's big idea was something he called "mimetic desire". Human beings are born with a need for food and shelter. Once these fundamental necessities of life have been acquired, we look around us at what other people are doing, and wanting, and we copy them. In Thiel's words, the idea is "that imitation is at the root of all behaviour". Thiel said: "Social media proved to be more important than it looked because it's about our natures." We are keen to be seen as we want to be seen, and Facebook is the most popular tool humanity has ever had with which to do that.

The view of human nature implied by these ideas is pretty dark. If all people want to do is go and look at other people so that they can compare themselves to them then Facebook doesn't really have to take too much trouble over humanity's welfare, since all the bad things

Google, in my experience, knows that there are ambiguities, moral doubts, around some of what they do, and at least they try to think about it. Facebook just doesn't care

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that happen to us are things we are doing to ourselves. For all the corporate uplift of its mission statement, Facebook is a company whose essential premise is misanthropic. It is perhaps for that reason that Facebook, more than any other company of its size, has a thread of malignity running through its story. The high-profile, tabloid version of this has come in the form of incidents such as the live-streaming of rapes, suicides, murders and cop killings. But this is one of the areas where Facebook seems, to me, relatively blameless. People live-stream these terrible things over the site because it has the biggest audience; if Snapchat or Periscope were bigger, they'd be doing it there instead.

In many other areas, however, the site is far from blameless. The highest-profile recent criticisms of the company stem from its role in Trump's election. There are two components to this, one of them implicit in the nature of the site, which has an inherent tendency to fragment and atomise its users into like-minded groups. The mission to "connect" turns out to mean, in practice, connect with people who agree with you. We can't prove just how dangerous these "filter bubbles" are to our societies, but it seems clear that they are having a severe impact on our increasingly fragmented polity. Our conception of "we" is becoming narrower.

This fragmentation created the conditions for the second strand of Facebook's culpability in the Anglo-American political disasters of the past year. The portmanteau terms for these developments are "fake news" and "post-truth", and they were made possible by the retreat from a general agora of public debate into separate ideological bunkers. In the open air, fake news can be debated and exposed; on Facebook, if you aren't a member of the community being served the lies, you're quite likely never to know that they are in circulation. It's crucial to this that Facebook has no financial interest in telling the truth. No company better exemplifies the internet-age dictum that if the product is free, you are the product.

Facebook's customers aren't the people who are on the site: its customers are the advertisers who use its network and who relish its ability to direct ads to receptive audiences. Why would Facebook care if the news streaming over the site is fake? Its interest is in the targeting, not in the content. Fake news is not, as Facebook has acknowledged, the only way it was used to influence the outcome of the 2016 presidential election. On January 6, 2017, the director of national intelligence in the US published a report saying that the Russians had waged an internet disinformation campaign to damage Hillary Clinton and help Trump. "Moscow's influence campaign followed a Russian messaging strategy that blends covert intelligence operations — such as cyber-activity — with overt efforts by Russian government agencies, state-funded media, third-party intermediaries, and paid social media users or 'trolls,'" the report said.

In September, details of what the Russians had done started coming out. Kremlin-connected propaganda outfits bought \$100,000 of Facebook advertising and used it to target 10m Americans. The strategy was much sneakier than just taking out ads saying "Vote Trump": the ads focused instead on exacerbating existing social and political divisions inside America. The Russians created pages to spread inflammatory content about border security, black activism and benefit fraud, among other topics. There was fake news about Muslim men claiming benefits for multiple wives; there was also a staged scene from New York's Union Square, in which a Muslim man pretended to be assaulted by a bystander (actually an actor), in order to see whether passers-by intervened. There was a ton of anti-Hillary stuff, too, of course — but the cunning thing was the way it stoked the anger on both sides. The evidence was so clear that even Zuckerberg had to acknowledge it. "After the election, I made a comment that I thought the idea misinformation on Facebook changed the outcome of the election was a crazy idea," he said last month. "Calling that crazy was dismissive and I regret it. This is too important an issue to be dismissive."

The company is promising to treat this set of problems as seriously as it treats other problems such as malware, account hacking and spam. We'll see. One man's fake news is another's truth-telling, and Facebook works hard at avoiding responsibility for the content on its site — except for sexual content, about which it is super-stringent. Nary a nipple on show. It's a bizarre set of priorities, which only makes sense in an American context, where any whiff of explicit sexuality would ➤➤➤

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immediately give the site a reputation for unwholesomeness. Photos of breastfeeding women are banned and rapidly get taken down. Lies and propaganda are fine.

The key to understanding this is to think about what advertisers want: they don't want to appear next to pictures of breasts because it might damage their brands, but they don't mind appearing alongside lies because the lies might be helping them find the consumers they're trying to target. In *Move Fast and Break Things*, his polemic against the "digital-age robber barons", Jonathan Taplin points to an analysis on Buzzfeed: "In the final three months of the US presidential campaign, the top-performing fake election news stories on Facebook generated more engagement than the top stories from major news outlets such as *The New York Times*, *The Washington Post*, *Huffington Post*, *NBC News* and others." This doesn't sound like a problem Facebook will be in any hurry to fix.

The fact is that fraudulent content, and stolen content, are rife on Facebook, and the company doesn't really mind, because it isn't in its interest to mind. An illuminating YouTube video from Kurzgesagt, a German outfit that makes high-quality short explanatory films, notes that in 2015, 725 of Facebook's top 1,000 most-viewed videos were stolen from the people who created them. This is another area where Facebook's interests contradict society's. We may collectively have an interest in sustaining creative and imaginative work in many different forms and on many platforms. Facebook doesn't. It has two priorities, as Martinez explains in *Chaos Monkeys*: growth and monetisation. It simply doesn't care where the content comes from.

Zuckerberg himself has spoken up on this issue, in a Facebook post addressing the question of "Facebook and the election". "Of all the content on Facebook, more than 99% of what people see is authentic," he claimed. "Only a very small amount is fake news and hoaxes." More than one Facebook user pointed out that in their own news feed, Zuckerberg's post about authenticity ran next to fake news. In one case, the fake story pretended to be from the TV sports channel ESPN. When it was clicked on, it took users to an ad selling a diet supplement.

A neutral observer might wonder if Facebook's attitude to content creators is sustainable. Facebook needs content, obviously, because that's what the site consists of: content that other people have created. It's just that it isn't too keen on anyone apart from Facebook making any money from that content. Over time, that attitude is profoundly destructive to the creative and media industries. Access to an audience — that unprecedented 2bn-and-counting people — is a wonderful

\$505bn

Total value of Facebook shares

Making it the world's fourth most valuable company

thing, but Facebook isn't in any hurry to help you make money from it. If the content providers all eventually go broke, well, that might not be too much of a problem. There are, for now, lots of willing providers: anyone on Facebook is, in a sense, working for Facebook, adding value to the company.

Taplin has worked in academia and in the film industry. The reason he feels so strongly about these questions is that he started out in the music business, as a tour manager for acts including Bob Dylan and the Band, and was on hand to watch the business being destroyed by the internet. What had been a \$20bn industry in the US in 1999 was a \$7bn industry 15 years later. He saw musicians who had made a good living become destitute. That didn't happen because people had stopped listening to their music — more people than ever were listening to it — but because music had become something people expected to be free. YouTube is the biggest source of music in the world, playing billions of tracks annually, but in 2015 musicians earned less from it and from its ad-supported rivals than they earned from sales of vinyl. Not CDs and recordings in general: vinyl.

Something similar has happened in the world of journalism. Facebook is, in essence, an advertising company that is indifferent to the content on its site except insofar as it helps to target and sell

advertisements. A version of Gresham's law is at work, in which fake news, which gets more clicks and is free to produce, drives out real news, which often tells people things they don't want to hear, and is expensive to produce. In addition, Facebook uses an extensive set of tricks to increase its traffic and the revenue it makes from targeting ads, at the expense of the news-making institutions whose content it hosts. Its news feed directs traffic at you based not on your interests, but on how to make the maximum amount of advertising revenue from you.

In the early years of Facebook, Zuckerberg was much more interested in the growth side of the company than in the monetisation. That changed when Facebook went in search of its big payday at the initial public offering (IPO). This is a huge turning point for any start-up: in the case of many tech-industry workers, the hope and expectation associated with "going public" is what attracted them to their firm in the first place, and/or what has kept them glued to their workstations. It's the point where the notional money of an early-days business turns into the real cash of a public company. When the time came for the IPO, Facebook needed to turn from a company with amazing growth to one that was making amazing money. It was already making some, thanks to its sheer size, but not enough to guarantee a truly spectacular valuation on launch. It was at this stage that the question of how to monetise Facebook got Zuckerberg's full attention. It's interesting, and to his credit, that he hadn't put too much focus on it before — perhaps because he isn't particularly interested in money per se. But he does like to win.

The solution was to take the huge amount of information Facebook has about its "community" and use it to let advertisers target ads with a specificity never known before, in any medium. Martinez: "It can be demographic in nature (eg 30- to 40-year-old females), geographic (people within five miles of Sarasota, Florida), or even based on Facebook profile data (do you have children; ie, are you in the mommy segment?)."

That was the first part of the monetisation process for Facebook, when it turned its gigantic scale into a machine for making money. The company offered advertisers an unprecedentedly precise tool for targeting their ads at particular consumers. (Particular segments of voters too can be targeted with complete precision. One instance from 2016 was an anti-Clinton ad repeating a notorious speech she made in 1996 on the subject ➤➤➤)

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networks and their professed likes and dislikes. After waking up to the importance of monetisation, it added to its own data a huge new store of data about offline, real-world behaviour, acquired through

partnerships with big companies such as Experian, which have been monitoring consumer purchases for decades via their relationships with direct-marketing firms, credit card companies and retailers. There doesn't seem to be a one-word description of these firms: "consumer credit agencies" or something similar about sums it up. Their reach is much broader than that might make it sound, though. Experian says its data is based on more than 850m records and claims to have information on 49m UK individuals living in 26m households. These firms know all there is to know about your name and address, your income and level of education, your relationship status, plus everywhere you've ever paid for anything with a card. Facebook could now put your identity together with the unique device identifier on your phone.

It puts that together with the rest of your online activity: not just every site you've ever visited, but every click you've ever made. All this information is used to sell you things via online ads.

The ads work on two models. In one of them, advertisers ask Facebook to target consumers from a particular demographic. But Facebook also delivers ads via a process of online auctions, which happen in real time whenever you click on a website.

Because every website you've ever visited (more or less) has planted a cookie on your web browser, when you go to a new site, there is a real-time auction, in millionths of a second, to decide what your eyeballs are worth and what ads should be served to them, based on what your interests, and income level and whatnot, are known to be. This is the reason ads have that disconcerting tendency to follow you around, so that you look at a new telly or a pair of shoes or a holiday destination, and they're still turning up on every site you

visit weeks later. This was how, by chucking talent and resources at the problem, Facebook was able to turn mobile from a potential revenue disaster to a great hot steamy geyser of profit.

What this means is that even more than it is in the advertising business, Facebook is in the surveillance business. Facebook, in fact, is the biggest surveillance-based enterprise in the history of mankind. It knows far, far more about you than the most intrusive government has ever known about its citizens. It's amazing that people haven't really understood this about the company. I've spent time thinking about Facebook, and the thing I keep coming back to is that its users don't realise what it is the company does. What Facebook does is watch you, and then use what it knows about you and your behaviour to sell ads. I'm not sure there has ever been a more complete disconnect between what a company says it does — "connect", "build communities" — and the commercial reality. Note that the company's knowledge about its users isn't used merely to target ads, but to shape the flow of news to them. Since there is so much content posted on the site, the algorithms used to filter and direct that content are the thing that determines what you see: people think their news feed is largely to do with their friends and interests, and it sort of is, with the crucial proviso that it is their friends and interests as mediated by the commercial interests of Facebook. Your eyes are directed towards the place where they are most valuable for Facebook.

of "super-predators". The ad was sent to African-American voters in areas where the Republicans were trying, successfully it turned out, to suppress the Democrat vote. Nobody else saw the ads.)

The second big shift around monetisation came in 2012 when internet traffic began to switch away from desktop computers towards mobile devices. If you do most of your online reading on a desktop, you are in a minority. The switch was a potential disaster for all businesses that relied on internet advertising, because people don't much like mobile ads, and were far less likely to click on them than on desktop ads. Facebook solved the problem by means of a technique called "onboarding". As Martinez explains it, the best way to think about this is to consider our various kinds of name and address.

"For example," he writes, "if Bed, Bath and Beyond wants to get my attention with one of its wonderful 20%-off coupons, it calls out:

Antonio Garcia Martinez, 1 Clarence Place #13, San Francisco, CA 94107.

If it wants to reach me on my mobile device, my name there is:

38400000-8cfo-11bd-b23e-10b96e40000d

On my laptop, my name is this:

07J6yJPMB9juTowar.
AWXGQnGPA1MCmThgb9wN4vLoUpg.
BUUtWg.rg.FTN.0.AWUxZtUf

"This is the content of the Facebook retargeting cookie, which is used to target ads-are-you based on your mobile browsing," Martinez continues. "Each of these keys is associated with a wealth of our personal behaviour data: every website we've been to, many things we've bought in physical stores, and every app we've used and what we did there... The biggest thing going on in marketing right now, what is generating tens of billions of dollars in investment and endless scheming inside the bowels of Facebook, Google, Amazon and Apple, is how to tie these different sets of names together, and who controls the links."

Facebook already had a huge amount of information about people and their social

In the open air, fake news can be debated and exposed. On Facebook, if you aren't a member of the community being served the lies, you're quite likely never to know they are in circulation

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I'm left wondering what will happen when and if this \$500bn penny drops.

As Tim Wu shows in his energetic and original book, *The Attention Merchants*, there is a suggestive pattern here: that a boom is more often than not followed by a backlash, that a period of explosive growth triggers a public and sometimes legislative reaction. Wu's first example is the draconian anti-poster laws introduced in early 20th-century Paris (and still in force — one reason the city is, by contemporary standards, undisfigured by ads).

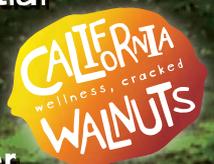
Facebook seems vulnerable to a backlash. One place they are likely to begin is in the core area of its business model: ad-selling. The advertising it sells is "programmatic", that is, determined by computer algorithms that match the customer to the advertiser and deliver ads accordingly, via targeting and/or online auctions. The problem with this, from the customer's point of view — remember, the customer here is the advertiser, not the Facebook user — is that a lot of the clicks on these ads are fake. There is a mismatch of interests here. Facebook wants clicks, because that's how it gets paid: when ads are clicked on. But what if the clicks aren't real, but are instead ➡➡➡

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automated clicks from fake accounts run by computer bots? This is a well-known problem, which particularly affects Google, because it's easy to set up a site, allow it to host programmatic ads, then set up a bot to click on those ads, and collect the money that comes rolling in. On Facebook, the fraudulent clicks are more likely to be from competitors trying to drive each others' costs up.

The industry publication Ad Week estimates the annual cost of click fraud at \$7bn. One single fraud site, Methbot, whose existence was exposed at the end of last year, uses a network of hacked computers to generate \$3m-\$5m of fraudulent clicks every day. Estimates of fraudulent traffic's market share are variable, with some guesses coming in at about 50%; some website owners say their own data indicates a fraudulent-click rate of 90%. This is by no means entirely Facebook's problem, but it isn't hard to imagine how it could lead to a big revolt against "ad tech", as this technology is generally known, on the part of the companies who are paying for it. I've heard academics in the field say that there is a form of corporate groupthink in the world of the big buyers of advertising, who are currently responsible for directing large parts of their budgets towards Facebook. That mindset could change. Also, many of Facebook's metrics are tilted to catch the light at the angle that makes them look shiniest. A video is counted as "viewed" on Facebook if it runs for three seconds, even if the user is scrolling past it in their news feed and even if the sound is off. If counted by the techniques that are used to count television audiences, many Facebook videos with hundreds of thousands of "views", would have no viewers at all.

A customers' revolt could overlap with a backlash from regulators and governments. Google and Facebook have what amounts to a monopoly on digital advertising. That monopoly power is becoming more and more important as advertising spend migrates online. Between them, they have

Facebook has no financial interest in telling the truth. Its customers aren't the people who are on the site: its customers are advertisers who relish its ability to direct ads to receptive audiences

Like • Reply · October 29 at 17:56

already destroyed large sections of the newspaper industry. Facebook has done a huge amount to lower the quality of public debate and to ensure that it is easier than ever before to tell what Hitler approvingly called "big lies" and broadcast them to a big audience. The company has no business need to care about that, but it is the kind of issue that could attract the attention of regulators.

That isn't the only external threat to the Google/Facebook duopoly. The US attitude to antitrust law was shaped by Robert Bork, the judge whom Reagan nominated for the Supreme Court, but the Senate failed to confirm. Bork's most influential legal stance came in the area of competition law. He promulgated the doctrine that the only form of anti-competitive action that matters concerns the prices paid by consumers. His idea was that if the price is falling that means the market is working, and no questions of monopoly need be addressed. This philosophy still shapes regulatory attitudes in the US and it's the reason Amazon, for instance, has been left alone by regulators despite the manifestly monopolistic position it holds in the world of online retail, books especially.

The big internet enterprises seem invulnerable on these narrow grounds. Or they do until you consider the question of

"affluent", and then checking to see if their different behaviour led to different prices. It did: a search for headphones returned a set of results that were, on average, four times more expensive for the affluent persona. A hotel-booking site charged higher fares to the affluent consumer. In general, the location of the searcher caused prices to vary by as much as 166%. So in short, yes, personalised prices are a thing, and the ability to create them depends on tracking us across the internet. That seems, to me, a prima facie violation of the American post-Bork monopoly laws, focused as they are entirely on price. It's sort of funny, and also sort of grotesque, that an unprecedentedly huge apparatus of consumer surveillance is fine, apparently, but an unprecedentedly huge apparatus of consumer surveillance that results in some people paying higher prices may well be illegal.

Perhaps the biggest potential threat to Facebook is that its users might go off it. Two billion monthly active users is a lot of people, and the "network effects" — the scale of the connectivity — are, obviously, extraordinary. But there are other internet companies that connect people on the same scale — Snapchat has 173m daily users, Twitter 328m monthly users — and, as we've seen in the disappearance of MySpace, the one-time leader in social media, when people change their minds about a service, they can go off it hard and fast.

For that reason, were it to be generally understood that Facebook's business model is based on surveillance, the company would be in danger. The one time Facebook did poll its users about the surveillance model was in 2012, when it proposed a change to its terms and conditions — the change that underpins the current template for its use of data. The result of the poll was clear: 90% of the vote was against the changes. Facebook went ahead and made them anyway, on the grounds that so few people had voted. No surprise there, neither in the users' distaste for surveillance nor in the company's indifference to that distaste. But this is something that could change.

The other thing that could happen at the level of individual users is that people stop using Facebook because it makes them unhappy. Earlier this year, in a paper from the American Journal of Epidemiology, researchers found, quite simply, that the more people use Facebook, the more unhappy they are. In addition, they found that the positive effect of real-world interactions, which enhance wellbeing, was accurately paralleled by the "negative associations of Facebook use". In effect, ➡➡➡

\$100,000

Facebook spend by Russian propagandists

during the US election

individualised pricing. The huge data trail we all leave behind as we move around the internet is increasingly used to target us with prices that aren't like the tags attached to goods in a shop. On the contrary, they are dynamic, moving with our perceived ability to pay. Four researchers based in Spain studied the phenomenon by creating automated personas to behave as if, in one case, "budget conscious" and in another

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people were swapping real relationships that made them feel good for time on Facebook, which made them feel bad. That's my gloss, rather than that of the scientists, who take the trouble to make it clear that this is a correlation rather than a definite causal relationship, but they did go so far — unusually far — as to say that the data “suggests a possible trade-off between offline and online relationships”. This isn't the first time something like this effect has been found. To sum up: there is a lot of research showing that Facebook makes people feel like shit. So maybe, one day, people will stop using it.

What, though, if none of the above happens? What if advertisers don't rebel, governments don't act, users don't quit, and the good ship Zuckerberg and all who sail in her continues blithely on? We should look again at that figure of 2bn monthly active users. The total number of people who have any access to the internet — as broadly defined as possible, to include the slowest dial-up speeds and creakiest developing-world mobile service, as well as people who have access but don't use it — is 3.5bn. Of those, about 750m are in China and Iran, which block Facebook. Russians, about 100m of whom are on the net, tend not to use Facebook because they prefer their native copycat site VKontakte. So put the potential audience for the site at 2.6bn. In developed countries where Facebook has been present for years, use of the site peaks at about 75% of the population (that's in the US). That would imply a total potential audience for Facebook of 1.95bn. At 2bn monthly active users, Facebook has already gone past that number, and is running out of connected humans.

Whatever comes next will take us back to those two pillars of the company: growth and monetisation. Growth can only come from connecting new areas of the planet. An early experiment came in the form of Free Basics, a program offering internet connectivity to remote villages in India, with the proviso that the range of sites on offer should be controlled by Facebook. “Who could possibly be against this?” Zuckerberg wrote in *The Times* of India. The answer: lots and lots of angry Indians. The government ruled that Facebook shouldn't be able to “shape users' internet experience” by restricting access to the broader internet. A Facebook board member tweeted: “Anti-colonialism has been economically catastrophic for the Indian people for decades. Why stop now?”

So the growth side of the equation is not without its challenges, technological as well as political. Google, which has a similar running-out-of-humans problem, is working on Project Loon, “a network of balloons travelling on the edge of space,



designed to extend internet connectivity to people in rural and remote areas worldwide”. Facebook is working on a project involving a solar-powered drone called the Aquila, which has the wingspan of a commercial airliner, weighs less than a car and, when cruising, uses less energy than a microwave oven. The idea is that it will circle remote, currently unconnected areas of the planet, for flights that last as long as three months at a time. It connects users via laser and was developed in Bridgwater, Somerset. (Amazon's drone programme is based in the UK too, near Cambridge. Our legal regime is pro-drone.) Even the most hardened Facebook sceptic has to be a little bit impressed by the ambition and energy. But the fact remains that the next 2bn users are going to be hard to find.

That's growth, which will mainly happen in the developing world. Here in the rich world, the focus is more on monetisation, and it's in this area that I have to admit something that is probably already apparent. I am scared of Facebook. The company's ambition, its ruthlessness and its lack of a moral compass scare me. It goes back to that moment of its creation, Zuckerberg at his keyboard after a few drinks creating a website to compare people's appearance, not for any real reason other than that he was able to do it. That's

Photos of breastfeeding women are banned and rapidly get taken down. Lies and propaganda are fine. They don't mind. The lies may help them find the consumers they're trying to target

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the crucial thing about Facebook, the main thing that isn't understood about it is its motivation: it does things because it can. Zuckerberg knows how to do something, and other people don't, so he does it. Motivation of that type doesn't work in the Hollywood version of life, so Aaron Sorkin had to give Zuck a motive to do with social aspiration and rejection. But that's wrong, completely wrong. He isn't motivated by that kind of garden-variety psychology. He does this because he can, and justifications about “connection” and “community” are ex post facto rationalisations. The drive is simpler and more basic. That's why the impulse to growth has been so fundamental to the company, which is, in many respects, more like a virus than it is like a business. Grow and multiply and monetise. Why? There is no why.

Automation and artificial intelligence are going to have a big impact in all kinds of worlds. These technologies are new and real and they are coming soon. Facebook is deeply interested in these trends. We don't know where this is going, we don't know what the social costs and consequences will be, we don't know what will be the next area of life to be hollowed out, the next business model to be destroyed, the next company to go the way of Polaroid or the next business to go the way of journalism or the next set of tools and techniques to become available to the people who used Facebook to manipulate the elections of 2016.

One of the things that really stands out about the Russian use of Facebook during the US election was how it draws all the things I've mentioned together. It focused on American fragmentation, and sought to exacerbate the country's social and political divides. It used Facebook's algorithmic targeting to focus on what it already knew people thought, and gave them more of the same. It used falsehoods, knowing that the company had no real interest in weeding them out. It manipulated people's feelings. The people behind that campaign had done a better job of studying Facebook's innate amorality and potential for misuse than anyone in government.

We just don't know what's next, but we know it's likely to be consequential, and that a big part will be played by the world's biggest social network. On the evidence of Facebook's actions so far, it's impossible to face this prospect without unease ■

*This is an updated version of an essay that appeared in Volume 39, Number 16 of *The London Review of Books**

David Blaine is world famous for his powers of manipulation. Now, he is accused of raping a model in London in 2004. Joining him on tour across North America, *Josh Glancy* reveals the intense inner life of a troubled showman



CONTROL BREAK



If you spend more than 90 seconds in the company of David Blaine, chances are he'll do magic on you. It's like a nervous tic. He reaches for his cards almost unconsciously and suddenly you're being bamboozled by his demonic wizardry.

The first time I met Blaine, earlier this year in his office in Manhattan, he was planning for his first magic tour of North America. But while telling me about the tour — chances of death, impossibility of completion, unheard-of innovation — he stopped every five minutes to perform another trick.

Magic cards appeared from angles unknown. I pushed a small ice pick through his hand, seemingly causing no pain or bleeding. The meeting, held to decide whether I would join him on a leg of the tour, hardly needed to continue. I was in.

This is how Blaine operates. He is the master seducer. Everyone he meets is an audience to be held in rapt wonder as he demonstrates his genius, talking in his slow, deep insistent tone, his hands always shuffling and flicking.

And it really works, this stuff. Sit down for lunch with him and within minutes he has the waitresses cooing and gasping at his tricks. Cross the border with him into Canada and he instantly has the irascible passport officers shaking their heads in awe and asking for autographs.

Blaine, 44, has an insatiable need for attention and admiration that has driven him through a quite astonishing career. He clearly loves to make beautiful women smile. And there have been many of them; over the years he's been linked with Fiona Apple, Madonna, Daryl Hannah and an array of famous models.

But is there another side to Blaine? Earlier this month, it emerged that Natasha Prince, an art dealer and former model from Liverpool, had alleged that Blaine raped her in a house in west London in 2004. Prince reported the charges to the Metropolitan police late last year, but in the torrent of sexual abuse revelations that have followed the Harvey Weinstein scandal, the news has been made public.

Now 34, Prince claims that Blaine assaulted her at a house in Chelsea when she was 21. The pair first met, she says, at a nightclub in Knightsbridge. The next day Blaine texted to invite her to a party. He sent a car to take her to a mansion in Chelsea. According to an interview Prince gave to The Daily Beast website, Blaine gave her a vodka and soda. Twenty minutes later he led her into a bedroom and they kissed. After that, she alleges, he said, "Finish your drink," took the glass away and "that's really the last thing I remember".

Prince reports being confused and upset by what happened. Blaine stayed in touch, she says, calling her, and they saw each other three more times. Prince says that after the incident she suffered from years of anxiety



Above: with model Alizée Guinochet, the mother of his daughter, in 2012. Previous pages: performing at a charity event in 2013

and low self-esteem. Despite a career that had seen her feature on a number of magazine covers, she retired from modelling aged 24 and now works for the Gagosian gallery in New York. It took her 13 years to report what happened. "My interpretation was that it was my fault," she told The Daily Beast. "I didn't think of it as rape."

Blaine strongly denies the allegations. A statement from his lawyer said: "My client vehemently denies that he raped or sexually assaulted any woman, ever, and he specifically denies raping a woman in 2004." Blaine, he added, will "fully co-operate" with any investigation and has "nothing to hide".

So will another entertainment idol be brought down by his predatory past? That will ultimately be for the Metropolitan police, who have asked Blaine to come to London to be interviewed under caution, and potentially a court of law, to ascertain.

The allegations certainly come at a bad time for Blaine, who is in the process of reshaping his career and launching his live show on the world stage. The show is the latest chapter in an extraordinary journey that began when he appeared as a street magician and quick-fire trickster in New York, aged 18. His first television special, David Blaine: Street Magic, broadcast in 1997 when he was 24, transformed the art of magic by focusing on the reactions of his audience, and was devoured by viewers at home. The footage of him from the time became iconic; trademark T-shirt and a gaping audience transfixed by his reality-defying tricks and saturnine, intense stare, like a falcon observing its prey.

Then came the stunts. In 1999, he was

"The marriage thing has always been difficult for me. I've never been good at just isolating myself with one person"

buried alive in a transparent box for seven days. It was Donald Trump, no less, who gave him this first real break, loaning him use of a plot of land on New York's Upper West Side. "He was great with me," Blaine said last year, describing the president as "someone who was good to a kid he had no reason to be nice to".

In 2000, Blaine spent 63 hours encased in a block of ice in Times Square, a record at the time. It took him a month to recover. Other astonishing stunts followed, including spending 35 hours on a pillar in New York's Bryant Park before diving 100ft onto a pile of cardboard boxes.

And then in 2003, shortly before he met Prince, came his London stunt; 44 days suspended in a Perspex box above the south bank of the Thames, surviving solely on water. The stunt created a surreal atmosphere in the capital. Crowds gathered every day to watch him, support him, taunt him and wave hamburgers in his face.

He says it is still the best thing he's done. "It was great," he told me. "It had so many levels: spiritual, interactive, controversial. How do you beat that?" Still, it took a punishing toll. He lost 25% of his body weight in the box and had minor organ failure afterwards. "That's the reason I think my lifespan will be shorter than it should be," Blaine says. He thinks there's a good chance he'll die in his sixties.

Post-London box, Blaine was at the height of his fame. That is when he reportedly met Prince, who recalled her first impressions in the nightclub. "He was giving me a lot of attention," she said. "I'm thinking, 'He's famous; there are beautiful girls all around him.'"

When he wasn't starving or freezing himself half to death, Blaine's life was indeed beautiful. He was often seen hanging out with his friend Leonardo DiCaprio and the "Pussy Posse", which also included the actors Tobey Maguire and Kevin Connolly. They were the sharpest, cockiest, most concupiscent crew in New York, princes of the city. Blaine has said he doesn't see much of Leo nowadays. But does he still party as hard? "It's still a part of my life," he says. "I have lots of friends, all different friends. I always have."

In June, I spent three days with Blaine on his regional magic tour, which he devised because he wanted to master the art of live theatre. Typically, he turned this into an endurance stunt too, running the tour over 40 dates, with shows six nights a week in middle American towns and cities I'd never heard of, such as Northfield, Ohio, and Bethlehem, Pennsylvania. Once he has perfected the material, he hopes to bring the show to New York and London.

I joined him in Concord, New Hampshire, arriving at the theatre about two hours before showtime. I wasn't sure anyone was going to show up, because Blaine had done no publicity and barely ➤➤➤

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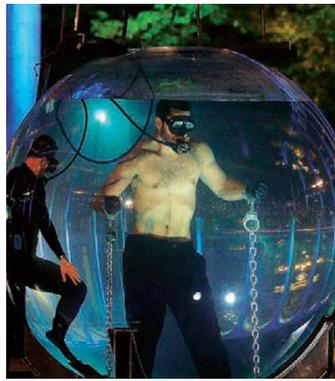


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DANGLING MAN Blaine survived 44 days suspended in a Perspex box above the Thames in 2003



The clim to an underwater endurance challenge in New York, 2006, saw Blaine black out



For his Frozen in Time stunt in 2000, the magician was cocooned in ice for 63 hours



Another endurance feat saw him stand on top of a pillar in New York for almost 35 hours in 2002

advertised the tour. It had been several years since he was in the public eye. Yet an hour before, crowds started surging into the theatre. People haven't forgotten him.

The show is a decathlon of magic, a parade of Blaine's greatest hits. The old ice pick through his hand trick is there, except now he's moved it to his biceps because he accidentally hit a nerve in his hand, numbing it, rather worryingly. He swallows a frog. He swallows an engagement ring. Both are regurgitated using his extraordinary tracheal control. Next up comes the human fire hose, an old trick perfected by the great Egyptian regurgitator Hadji Ali, where he extinguishes a fire by spraying a water hydrant out of his stomach. He calls it the "spectacle of the real".

The show finishes with 10 minutes underwater in a giant tank. It's a long way short of the 17 minutes he did as a world record in 2008, but still an astonishing amount of time for a 44-year-old man to spend underwater six nights a week.

Blaine's versatility is the key to his power as a magician. Because he does both tricks and endurance stunts, the range of emotions he can elicit is unrivalled. Childlike awe, confusion and amazement, but also horror and discomfort. It's no wonder that people regularly come up to him and accuse him of being a satanist. How can one man have such mesmeric control of his own mind and body and, seemingly, yours?

Blaine treats his magic with deep gravity, dissecting every moment of every show. I wonder what he makes of the big magic showmen such as Dynamo or Penn & Teller. He scoffs. Most of them aren't doing "the real work". "They don't think about it from an artistic point of view," he says. "They're like, 'Let's sell it and make money.'"

On the subject of why there are so few famous women magicians, he says: "A few hundred years ago, they were called witches and burnt at the stake. I think it carried on. The same way there is still racism. It doesn't make any sense."

After a while, we veer off magic and start talking about philosophy, literature

and God. He gets deep and dark pretty fast, and shares the fact that he often suffers from depressive periods between shows. I ask him about the fact he has Primo Levi's Auschwitz number tattooed on his arm. Isn't that a bit macabre? "No, not at all," he says. "I like him because he doesn't judge anyone, he's just stating it as it is. In Auschwitz he got to see human beings with all the layers stripped back, no rules or regulations."

Another key influence is Herman Hesse's Siddhartha. Its Buddhist philosophy helps inform his seemingly reckless risk-taking. "I don't fear death at all," he says. "I don't look at it as a bad thing. It's part of life. Life is everything in the universe." His mother, who raised him on her own after his father left and then overdosed on heroin, also taught him to be stoic. "When she was dying she was so brave, never complaining," he says. "She made it not scary to me."

In fact, the only thing that really holds him back is his six-year-old daughter, Dessa, who lives in Paris with her mother, the actress Alizée Guinochet. He visits regularly and video-calls his daughter when he is on the road. "I'm more careful now," he says of his body stunts. "I don't want to leave her alone."

Blaine and Guinochet dated for some time, but are now "best friends". Monogamy, it seems, is not for him. "The marriage thing has always been a difficult idea for me," he says. "I've never been good at just isolating myself with one person, there are so many distractions — you're always interacting, travelling, meeting people all the time. It takes somebody to understand that. It's hard; they say they get it, and then... it's tricky."

"I'm more careful now," he says of his death-defying stunts. "I don't want to leave my daughter alone"

Over lunch in Toronto, I wanted to find out where his seemingly desperate urge to shock and amaze comes from. Why does he communicate through magic? He traces it back to his early childhood, inventing tricks to delight his mother. And perhaps to not having a father, pointing out that the great magicians he studied, most notably Harry Houdini, became "like fathers" to him.

Magic, it seems, became a shield for Blaine as a young fatherless boy in Brooklyn. Aged 12, he would work as a busboy in the restaurant where his mother was a waitress. "When you work hard, age 12, you understand the value of a dollar," he says. He had excellent grades, but wasting his time and money at university was of no interest. He wanted to be independent, self-sufficient and powerful. Weaving magic spells gave him the power he needed.

One thing I quickly realised on tour is that Blaine likes to be watched all the time. Normally, with a celebrity you feel like you're intruding by being overly present, but Blaine berated me when I tried to give him some space after a show.

In fact, the only time I lost sight of him was after the show in Kitchener, Ontario. He disappeared for a while, before stepping off the tour bus with two beautiful women. I told him I was amazed he had the energy to entertain after such a draining show. He grunted in reply, for once shy of an opinion.

But everyone who waits for him backstage gets a chat and selfie, not just the pretty women. He laps it all up, from fawning old ladies to nerdy young magic bros. Once they are finally sated, Blaine waves goodbye. In Kitchener, a starstruck young boy waved back at him. "Thank you for not dying," he shouted as we jumped into a Toronto-bound car.

It was a relief, in a way, when my stint on the tour ended. I found Blaine's intensity and darkness difficult to be around at times. He's fascinating but unsettling company. I was surprised, though, to hear of the rape allegations made against him. If his career does go the way of Weinstein's, the world will have lost a unique artist ■

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Eco-jets and floating cycle paths could soon rejuvenate city rivers



The Audi Aicon concept vehicle is a driverless car with lights that move like eyes

In association with Audi 

THE CO-PILOT TAKES OVER

The key to a driverless future is artificial intelligence, which will enable self-driving cars to take decisions like a human. When it does, expect the 'robo-cab' to be waiting around the corner, writes *Dominic Tobin*



FACT FROM FICTION JOHNNY CAB

The Daimler-Bosch self-driving taxi will be missing a trick by not placing an animatronic cabbie in the front seat. Or maybe its creators don't want to be accused of copying Johnny Cab, a too chirpy robot chauffeur that ends up wrenched off its mounting after being hailed by Arnold Schwarzenegger in the film *Total Recall*.



TOMORROW'S WORLD
An impression of urban mobility in an age of autonomous cars, main image

AT THE CONSUMER ELECTRONICS SHOW IN LAS VEGAS

two years ago a leading car maker unveiled a machine that it said was a vision of the future. It certainly looked the part, with a sleek silver body shell, a steering wheel that retracted into the dashboard and four lounge-style chairs that could rotate to face one other. The most startling feature, though, was its self-driving ability.

It was filmed navigating through San Francisco shortly before its futuristic doors swung open to journalists. We stepped onto the car's wooden floor and looked at a calming forest projected onto the windows as the car drove itself along the runway of a nearby airbase. It felt as if the future had arrived — until that is, the engineers revealed the car's secret: it was simply following a programmed route, from which pedestrians and other vehicles were being kept well clear. And it hadn't been driving itself through San Francisco at all. That was impossible: the amount of computing equipment required simply would not have fitted in the vehicle and would have had to be hauled round on a trailer. Not quite so sleek.

The problem is the amount of information needed to recreate a driver's awareness. To replicate human eyesight, for example, a driverless car requires ultrasonic sensors, radar, cameras with night vision and a laser-based lidar system (a light-based version of radar). In 2015 processing all this data in real time so that a driverless car could react instantly was not possible without a truckload of PCs.

One of the biggest challenges for car makers is data processing. Which is why an electronics company better known for chips used in graphic-rich computer gaming is involved in producing a "supercomputer for driverless cars" that will support the development of artificial intelligence (AI). It is a crucial part of the jigsaw. Fully driverless cars won't be robots on wheels; they will have to think like us.

"There's no way you could write a computer program that could take account of everything that happens around your car," says Danny Shapiro, head of automotive at Nvidia. "Instead we're using artificial intelligence — or more specifically a technique called deep learning — to train the car to understand its environment and operate safely."

Deep learning imitates the way our brains function. Instead of programming a car to remain within white lines and to stop when it sees an octagonal red sign with white writing, AI allows a computer to learn from what it sees and what we do.

The system compares data from the car's sensors with the actions of a human developer driving normally on public roads. That knowledge can then be carried over to unfamiliar situations. During testing, Nvidia's driverless car spotted a lorry waiting to join the road but hidden behind a parked car. The autonomous vehicle slowed cautiously, even though it had never previously been presented with such a situation.

As well as other vehicles, driverless cars must learn to recognise everything else they might encounter on the road. "In Australia it's important to train a system to recognise kangaroos, but also the [animals'] behaviour is something that AI can be taught to anticipate," says Shapiro. "If there's a cow at the side of the road, it's usually grazing, but if there's a kangaroo, it could jump



driverless cars. “That is [priority] No 1. No 2 is that we avoid accidents, and No 3 is the same.”

Accident prevention is the reason the first driverless cars won't be cheap. A lidar sensor alone costs \$7,500 (£5,700), a hefty sum to add to the price of a car. “We must invest and install enormously expensive equipment,” Hoheisel says. “It may cost 20, 50 or even 100 times as much as the electronics of existing cars.”

And cost is one reason the public's first taste of fully driverless technology is unlikely to be in their own vehicles but in “robo-cabs”. These will be designed to zip from, for example, station to city centre, hailed by app and offering the convenience of a taxi service — without the chatter from the driving seat.

Bosch has teamed up with manufacturers to begin development of a small electric car that could function as a robo-cab, and discussed with London's transport authority how it could be used. It envisages a fleet of black robo-cabs with orange lights on top, a homage to the capital's famous black cabs. In Milton Keynes, the plan is to have taxi pods that drive through pedestrianised areas, as well as on roads. A trial of the technology has just begun.

And if this convenient, cheap inner-city transport takes hold, privately owned cars could be banned from city centres — an extension of the clean air zones that are being set up to discourage owners of old, polluting cars from driving into areas of poor air quality.

“If there's a change from ‘I want to buy a car’ to ‘I want to lease some mobility’, the impact will be profound,” says Nathan Marsh of Atkins, a design and engineering consultancy. “At the moment, privately owned cars spend about 96% of their time static. We are going to see very different cities and highways: cars will be moving.”

Despite the imminent arrival of driverless technology, there are plenty of gaps to be filled, not least the question of how a driverless car can hope to navigate busy streets, which have been designed around the nuances of human perception.

How will a driverless car tell that a group of people standing by a zebra crossing are just chatting rather than waiting to cross? Will they understand signs from traffic police beckoning cars? And what will be their response to rude gestures from other motorists?

It's a question that car manufacturers are researching now. The Audi Aicon concept vehicle, for example, has lights at the front that can resemble eyes. These can follow pedestrians as they walk past, which is meant to provide reassurance that the car knows they are there and isn't about to run them over.

Little discussed in this vision of a driverless future is one influential group of people for whom autonomous cars could be vital. “There is an expectation that the early adopters will be young city-dwellers, but first across the line may be the elderly population who are beginning to lose the ability to drive,” says Marsh.

The economic benefits of bringing personal transport to the elderly and disabled could be enormous. Google released a video of one of its early driverless cars going to a drive-thru. The man behind the wheel had nothing to do, but choose his food. For him, it was a revelation, because he was blind.

Fully autonomous cars will be some of the most advanced machines yet created when they arrive. But is there a danger that we will slip into the world of the film *Wall-E*, in which robots fulfil every need while we sit slumped in our cars? That's not going to happen just yet. People will still be driving — for pleasure ■

the fence and run into the road. A mailbox is not going to move, but a child, dog or bicycle does, and they move in different ways.”

The question of the right response when there's no right response is a thorny topic. If an accident is inevitable, do you run over the pair of schoolchildren in front of the car or the group of pensioners on the pavement? Fans of heated ethical debates or expensive litigation will be disappointed to learn that no one we spoke to planned to program cars to kill one group at the expense of another; or to scan faces and use profiling to class some road users as less worthy than others.

Bosch — best known in Britain for its power tools and washing machines but also a leader in the field of autonomous cars — says the solution is simply to slam on the brakes, cutting the energy of an impact as much as possible, instead of acting as executioner.

“We have to avoid accidents,” says Dirk Hoheisel, a board member at Bosch with responsibility for

FROM CRUISE CONTROL TO TOTAL CONTROL

TRADITIONAL

Cars that are completely controlled by the driver, save basic functions such as cruise control

LEVEL 1

Features such as adaptive cruise control, which will automatically slow the car down to keep a safe distance from vehicles in front. First seen: 1997 (Toyota Celsior in Japan). Available in cars such as Ford Fiesta, Vauxhall Astra, Peugeot 3008

LEVEL 2

Systems that can take over steering, accelerating and braking functions on some roads but must still be monitored by a driver. First seen: 2003 (Honda Inspire in Japan). Available in cars such as BMW 5-series, Mercedes E-class and Volvo XC90

LEVEL 3

A big leap because these vehicles don't need human supervision in certain conditions (initially on motorways at slower speeds). Drivers have to remain alert, as they may need to take back control with a few seconds' warning. Due: mid-2018

LEVEL 4

More advanced technology that can drive the car on most roads in most conditions. If it starts to struggle, the car will pull over until the driver can take control. Due: 2020 (estimated)

LEVELS

No need for steering wheel, accelerator or brakes — or a human. Due: 2021 (estimated)

THE NEXT RIDE TO WORK

Forget the bus: futuristic flying machines, rocket skates and electric skateboards promise to make our daily commutes far more exciting, write *Matt Bingham and Nick Rufford*



JetPack Aviation JB-10 £n/a

Jetpacks are mad, of course, and are not yet on sale, but one company — JetPack Aviation — is developing a production model. Yes, it's designed in California. Yes, that is a pair of turbine-style jets. Yes, you will need to start setting money aside: expect to pay about £200,000 once production achieves lift-off. jetpackaviation.com



Acton R10 rocket skates £530

Strap these on and enjoy 90 minutes of effortless travel at speeds of up to 12mph. The R10s do not feature actual rockets, just an electric motor in each skate. Toe-tip controls let you accelerate; rock back on your heels to brake. An app tracks distance and speed, and, you might hope, calls 999 if you come off. actonglobal.com

Gocycle G3 £3,500

Nip into Halfords for an electric bike and you'll be spoilt for choice, but most will be regular pushbikes with a heavy battery and motor bolted on. Not the Gocycle. Designed by a former McLaren racing engineer, the latest model, the G3, is light, made from exotic materials such as magnesium and syncs with your phone. gocycle.com



FACT FROM FICTION

HOVERBOARD

OK, it still uses wheels but in other respects the Boosted Board is your hoverboard from 1989's *Back to the Future Part II*. Hop on, like Michael J Fox, and outrun bullies at up to 20mph. Just don't try to use it to plough across water.



Boosted 2nd Gen Board
from £1,275

"The world's lightest electric vehicle" — a powered skateboard that weighs 15lb — can travel seven miles, an average daily commute, at up to 20mph on a single charge. If getting to work is a bit of an uphill struggle, it's also capable of climbing a 20-degree slope.
boostedboards.com



Inmotion V5F £689

This 15mph electric unicycle is, thankfully, self-balancing — all you need to do is step onto the footrests on either side, which fold back in for carrying. It's waterproof, there's a light for anyone brave enough to ride at night and Bluetooth speakers so you can play a soundtrack. Or maybe warn pedestrians.
proj42.co.uk

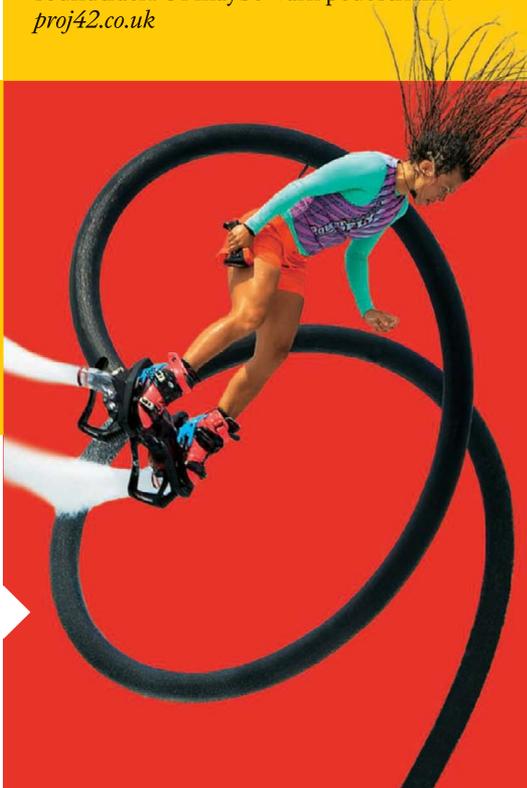


Kitty Hawk Flyer £n/a

Fed up with jet skis spoiling the sound of waves lapping at the shore? Wait until the all-electric Kitty Hawk Flyer starts buzzing around. Unveiled in April and backed by Google's Larry Page, it is due on sale soon. The craft is designed to fly over water, so you'll need a life jacket. Oh, and in the UK, a pilot's licence.
kittyhawk.aero

Zapata Flyboard sport kit
£4,300

A hose sucks up water and shoots it back out of this "hydroflight" contraption as two high-power streams, allowing you to hover over standing water. Use different nozzles and add a swivelling baseplate to perform airborne tricks. Helps if you have your own lake to practise on.
flyboard.com



Ninebot by Segway KickScooter ES2 £599

Segways are back. Not in the pogo-stick-on-wheels design — that concept went south when the company's owner drove one off a cliff — but as a 15mph electric scooter that folds into a 27lb package. The range is 15 miles and use of shock absorbers makes for a "comfortable ride".
segway.com

TUBULAR BELLE
Virgin Hyperloop One is testing a prototype pod in the Nevada desert



IN PODS WE TRUST

Underground tubes carrying passenger pods at speeds of 700mph may sound like a pipe dream, but Richard Branson has faith in the hyperloop. *By Mark Harris and Nick Rufford*

FACT FROM FICTION VACUTUBE

Passengers travelling in magnetically levitated cars at huge speeds in a vacuum pipe — no, not Elon Musk’s hyperloop but the vacutube, as described by Robert Heinlein in his 1956 sci-fi novel *Double Star*. Coincidence? Musk has namechecked Heinlein as an influence on him as a teenager.



MAGNETICALLY LEVITATED PODS, POWERED BY SOLAR energy, blasted through tubes at almost the speed of sound and able to deliver passengers from London to Edinburgh in 45 minutes. That’s the concept behind the hyperloop, a cross between a bullet train and the old-style pneumatic tubes that conveyed mail and money around department stores.

If it seems familiar, that’s because it revives the decades-old sci-fi staple of trains travelling through tubes with the air pumped out to reduce friction. Get rid of their wheels as well, by levitating the pods with powerful magnets, and trains could travel faster still, goes the theory.

The term “hyperloop” was coined by the founder of Tesla, Elon Musk, in 2013, but he declared himself too busy to pursue the idea, inviting other engineers to step up to the challenge. The response was immediate. Students, entrepreneurs and engineers around the world started designing streamlined pods and continent-spanning tubes. Four years on, dozens of countries — including the UK — have plans for routes that could compress long trips by train or car into hyperloop journeys barely long enough to read a paper.

If you think the idea should have stayed on the pages of novels such as Robert Heinlein’s *Double Star*, tell that to Sir Richard Branson, who has just bought a chunk of the world’s biggest hyperloop company and renamed it Virgin Hyperloop One.

“We’ve been looking for technology that will transport people in Britain and other countries at much greater speeds [than on trains],” says Branson. “The exciting thing about hyperloop is that we could — if we could get a straight line between London and Edinburgh, or London and Glasgow — transport people in about 45 minutes. The pod could literally come to your office or your home and pick you up. It would then take you down a tunnel, connect to our system and take off. [It would arrive] 45 minutes later — a lot easier than the 4½ [or] 5 hours it takes currently in trains. But obviously it’s not just for Britain. We are talking to countries all over the world.”

Virgin Hyperloop One already has a working prototype that runs on a 500-metre test track in the Nevada desert, half an hour’s drive out of Las Vegas. In July, its first-generation pod, the XP-1, accelerated for 300 metres and glided above the track using magnetic

levitation (maglev), before braking and coming safely to a stop.

Until 2014, Josh Giegel, the company's co-founder, was a rocket scientist, developing next-generation spaceships for Virgin Galactic and SpaceX. Then Musk's hyperloop proposal got him thinking. "My mission is to demonstrate to the world that hyperloop is possible, that it isn't just a complete crazy dream," Giegel says. Together with the venture capitalist Shervin Pischevar, he created a start-up dedicated to building hyperloop networks.

"It's like us building the airplane, the airport, the air traffic control... and the sky," he says with a laugh. "But if you're able to engineer those all simultaneously, you get to design something that hasn't even been envisioned before — and you get to do it with 21st-century technology."

Hyperloop One has about 300 employees and — before Virgin took an undisclosed stake — had raised about £180m, with feasibility studies completed in Dubai, the UK, Russia and America. The company's goal is to have three systems in service by 2021.

"Elon's original idea was inspirational but we've moved quite a way beyond that now," says Giegel. "Two-and-half years of simulation and development has resulted in a system that is safer and better. We've essentially reinvented maglev to make it much more energy efficient."

While high-speed passenger travel remains the main objective, Giegel says hyperloops could also revolutionise freight transport.

"A hyperloop pod is something that could fit perhaps 99% of all Amazon packages," he says. "You could put a distribution hub in the centre of the UK and transport packages the same day throughout the country. What we're building now are Lego blocks, fundamental pieces of technology that connect and can be modularised into different vehicles for different uses."

"We're very focused on how to make this work in the real world. A problem with mega-projects is that they take so long to build you spend a lot of money before you earn a dollar in fares. We're developing advanced manufacturing techniques to be able to build fast."

Giegel points out that hyperloops need far less space than traditional high-speed rail networks, generate almost no noise and there is no threat of animals or cars straying onto the track. "There are also ways to entice communities to want to have them, such as generating extra power from solar panels and making them so cheap people can ride them very often, even daily," he adds.

Most hyperloop engineers believe that the first systems are likely to be created in the Middle East, perhaps Dubai, where tracks can be built in empty desert, there is plenty of sun to power them, money is plentiful — and regulations are not. However, European countries have been among some of the most enthusiastic supporters. Hyperloop One has had what it calls "advanced discussions" to demonstrate its technology in Holland and Finland.

Adam Anyszewski is one of those who believes the dream could become reality. He and a group of fellow students in Edinburgh University's HypED team are looking beyond the pod itself to a fully functioning hyperloop network.

"What the Tube did for London, the hyperloop will do for the UK," he predicts. "With Brexit, the country has to start being more competitive, increasing its productivity and having a high-quality workforce that is well integrated within the country's infrastructure."

This summer, HypED's London to Edinburgh route was named one of the winners in a global hyperloop competition. It would connect the two cities via Birmingham and Manchester, with pods hopping between them in as little as a quarter of an hour.

"Everyone hates the HS2 high-speed rail project but everyone knows it's necessary," says Anyszewski. "Hyperloop offers a compelling alternative: fast, cost-competitive and much more environmentally friendly than any other mode of transport."

"The UK is a very favourable environment. The responses we have had from the Treasury, the Infrastructure and Projects Authority, and the departments of international trade, transport and business have been overwhelmingly positive."

Although the London to Edinburgh route could not run on solar power alone, the efficiency of running pods through evacuated tubes means they should use less than half the energy of trains, and up to six times less than planes, according to a US government study.

For all the enthusiasm for such sustainable, low-cost travel, however, experts remain largely sceptical. "It would be a real feat to be able to make something like the hyperloop financially viable," says Professor Bent Flyvbjerg of Oxford University's Saïd Business School, an economist specialising in mega-projects. "There are very few high-speed rail lines around the world, and they have all needed subsidies."

One big problem for any UK hyperloop network would be fitting it in alongside existing roads, tracks and housing. London's Crossrail project tipped the scales at an eye-watering £14.8bn — and that is for well-known and proven rail technology. Flyvbjerg thinks a more economical option would be to run hyperloops from out-of-town airports.

"The more you can leverage existing infrastructure, the lower the cost you can achieve," he says. "It would be an advantage for hyperloop to have stations where people can get rid of their cars and catch a pod. Airports are that kind of place; city centres are not."

The dream — or, for less hardy travellers, the nightmare — of commuting from London to Edinburgh in a magnetically levitating pod at about 700mph looks likely to remain, for a good while yet, just that. The practicality of long-distance vacuum tubes has yet to be proven, and the cost and regulatory challenges of building an entirely new transport network loom large. Nearly half a decade after Elon Musk dreamt up the hyperloop, it still looks almost as far off as his Martian colonies ■

"The exciting thing is that we could transport people from London to Edinburgh in 45 minutes"

THE PODFATHER
Richard Branson hopes to be the first to operate a British hyperloop



GET IN THE LOOP

1. Pods

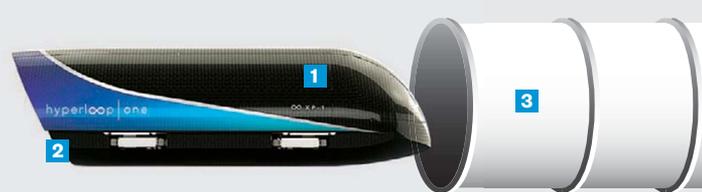
Passengers or freight travel in 29ft-long "aeroshells" made of lightweight carbon fibre — stronger than steel

2. Propulsion

They speed along a "magnetic river", propelled by linear induction motors and levitated by powerful magnets

3. Tube

To reduce drag, pods travel in a near vacuum, kept at about 1/1000th of outside air pressure by valves and pumps



IN FULL FLOW

Innovations such as eco-jets and floating cycle paths could soon bring a buzz back to city rivers and ease road congestion, says *Emma Smith*



FOR THOUSANDS OF YEARS, rivers were the transport arteries around which the great centres of population clustered and thrived, enabling the rapid movement of people and goods, allowing commerce to flourish. Nowhere was this more true than London where, in its 19th-century heyday, the port of London was the busiest in the world and exotic goods would arrive by water, while thousands of small boats transported people across the Thames, amid a constant hubbub of activity.

With the rise of containerisation after the Second World War, and the move to bigger ships, the rivers lost their place as the engine rooms of a city's prosperity. Dockyards declined, before being transformed into inner-city marinas. The rivers lost their functional role as a means of transport.

Now, architects and inventors are hoping to restore rivers to the heart of our cities' transport systems.

LILIUM JETS RIVER TRANSPORT MEETS THE JETSONS

Imagine arriving at Heathrow airport, hopping into a flying taxi and setting down on a floating landing pad on the Thames, in the heart of the capital, just 10 minutes later — a journey that would take at least an hour by car. That is the future as envisaged by Remo Gerber, chief commercial officer of Lilium, a Munich-based technology start-up that is working on a pollution-free, low-noise, electric jet capable of vertical take-off and landing, which could carry four passengers, plus pilot, and travel at speeds up to 186mph.

"Ten minutes from Heathrow to Embankment, is a conservative estimate," says Gerber. "And [it would take] only minutes more to the City or Canary Wharf."

The ultra-light carbon fibre jets work by way of 36 electric engines, situated under 12 flaps along the wings. The flaps start in a vertical position to give the power for take-off, then gradually tilt towards horizontal. When they have reached the completely horizontal position, all lift necessary to stay aloft is provided by the wings (as on a conventional aeroplane), enabling a range of about 186 miles between charges.

Following a successful, remote-controlled flight earlier this year, the first manned flight is planned for 2019. The first Lilium jets could then begin appearing by 2025 ("we are talking to various large cities"), with landing pads on the Thames just one of many potentially "fantastic opportunities", says Gerber.

THE THAMES DECKWAY A FLOATING CYCLE PATH

The brainchild of a "space architect" and a graduate of the Royal College of Art, this 7.4-mile

floating pathway would enable cyclists to travel from Battersea in southwest London or Canary Wharf in the east to the Millennium Bridge in the City (the proposed midpoint) in 15 minutes.

Anna Hill, a "social entrepreneur, innovator and artist-designer", devised the project with David Nixon, who worked on Nasa's crew quarters for the International Space Station, after the pair met while working at the European Space Agency. "I had been living in the Netherlands, where cycling was a pleasurable way to get to work, and then I returned to London, and became aware of the pressing danger issues of congestion and pollution for cyclists and walkers," says Hill.

The Deckway, which includes the engineering giant Arup among its backers, would be designed to fall and rise gently with the tides and generate its own energy (for lighting, refreshment kiosks and so on), from a mixture of renewable sources (solar, tidal and wind). The current plan is to charge a toll of £1.50 to use the floating pathway which, if given the green light, would cost in the region of £600m. Construction is scheduled to begin on a small demonstration section, in east London, in 2018.

THE RIVER THAMES MONORAIL

What feature about future transport would be complete without a monorail? But Richard Horden, the architect behind the scheme, insists this is no flight of fancy, but an attempt to address London's transport issues and reconnect commuters with the sights of their city.

"Imagine a slim, silver, sliver of a train, with a glass roof — futuristic and elegant," says Horden.

The rail — "ideally a maglev [magnetic levitation] system with the train floating just above the rails" — would run along the banks of the river, underneath the

southern arches of the central London bridges.

"I constantly revisit this project because I cannot understand why on earth it wasn't built," says Horden, who first envisaged the scheme in 1995. "It is a wonderful possibility. Now, you disappear underground into the Tube — with the monorail, you would be able to see the landmarks."



SEABUBBLES HIGH-SPEED, HYDROFOIL COMMUTER TRAVEL

Seabubbles, a French start-up, is hoping to change the face of river transport by introducing a fleet of high-speed, environmentally friendly river taxis into cities around the world, including London.

Founded by Alain Thébault, a record-breaking yachtsman and designer, and Anders Bringdal, a Swedish former windsurfing champion, the company has developed a compact electric boat (with the look of a waterborne car) that uses hydrofoils to lift it out of the water, reducing drag and enabling a top speed of about 25 knots (29mph) — an experience that has been compared to a "magic carpet ride". Passengers could hail the Seabubbles with a mobile app, in a similar way to Uber.

There were plans to begin a public trial of the Seabubbles on the Seine in Paris last month but technical and regulatory issues (particularly the need to raise current speed limits on the river) have pushed the start date back to next spring ■

FACT FROM FICTION SPINNERS

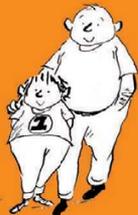
As seen in *Blade Runner*, Spinners are police cars that can take off vertically and spin round in flight. Nothing that a paint job and a few flashing lights bolted onto the Lilium jet couldn't recreate.





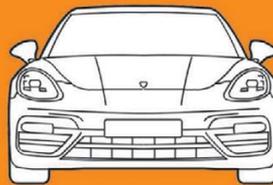
Tough love
Should this man seek joy outside his marriage?
Emma Barnett replies

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A rip-roaring exclusive extract from his new children's book, *Bad Dad*

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reviews the surprisingly unsexy Porsche Panamera Turbo

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Candice Brown
Ghoulishly good toffee apple pastry treats for Halloween

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Life

Boo!

Your guide to modern living



Relative Values

The film producer Jonathan Cavendish, 58, and his mother, Diana, 83, on his new movie, *Breathe*, which is about his father Robin's paralysis and the love that sustained them all. Interviews by *Caroline Scott*

Diana

After a whirlwind romance, Robin and I got married in 1957. I was 23, he was 26. The tea-broking firm he worked for had asked him to set up an office in Nairobi, and my parents kindly let me go out there while we were still engaged to see if I'd like it. Robin was penniless posh, but he was clever, amusing, attractive, sporty and outgoing. I fell deeply in love with the man and with Africa.

We had 18 months of marriage, before Robin got polio. He collapsed playing tennis and within hours couldn't move anything from the neck down, breathe or swallow. By the time I got to the infectious-diseases hospital, he'd been given a tracheotomy, and a set of mechanical bellows by his bed was pushing air in and out of his lungs. I was pregnant with Jonathan at the time and felt in a permanent state of shock.

I find it difficult to be objective about Claire [Foy] playing me in Jonathan's new film, *Breathe*, but Andrew [Garfield] is a very special fellow and his portrayal of Robin is extraordinary. Perhaps I'm hard-boiled, but the film has been done so well, it didn't upset me. You see, we had such a lot of fun. There were moments when it was difficult — when I look back, I can't think how I did it — but I wasn't the sort to make a fuss.

When Jonathan was born in 1959, I couldn't quite pay attention to him and Robin wasn't so interested in seeing his son. What saved me, and saved Jonathan, was that Tid, my dear old nanny, came out to Nairobi to look after him.



I'd been so worried that I couldn't give him the love and continuity a baby needs.

I didn't waste time feeling sorry for myself. There was too much to do. Robin came home attached to something like a washing machine that did his breathing for him. The scientist Teddy Hall designed a chair for him with an alarm that went off if his breathing stopped. Then you got going with the hand pump. It was about three years before Robin stopped being depressed. I didn't know how to cope with that. I'd shout: "For God's sake, buck up." There just wasn't any choice but to carry on. The only thing I really couldn't bear was other people's pity.

Because of the tracheotomy, Robin could only talk on the expiration of breath, but Jonathan had never known his father any other way. He was a very cuddly little boy: he loved to sit on Robin's lap, holding his hand. In the evening, Jonathan would lie between us on the bed, watching the telly. He had an incredibly vivid imagination and lots of imaginary friends. He got to know his father incredibly well and I think that gave him extra security. He was never spoilt because he understood his father

always came first. We sent him to boarding school when he was eight, to be with boys his own age. Robin wanted Jonathan to go into the army, while I thought he should have been an architect, but film was his thing.

Jonathan

My mother lives in the moment. For her entire married life, she lived with the knowledge that the breathing machine that kept my father alive might suddenly stop — which it frequently did. And then you had exactly two minutes to start hand-pumping oxygen into his body, or he'd be dead. This was a daily, lifelong responsibility that she wore with incredible lightness. I don't remember anxiety, though there were many occasions when he almost died.

When I was eight, we went off to Spain in a specially converted Dormobile, an unbelievably ambitious thing to do in the 1960s with a paralysed man. My mother had identical twin brothers who often came with us on adventures, and one of them, Bloggs, plugged the chair battery into the wrong socket and blew up both the van and the breathing machine. We skidded to a halt on a roundabout outside Barcelona while someone blew air into my father's lungs through his tracheotomy tube. My mother had a particular voice and demeanour in a crisis like this. She became very still and spoke crisply and precisely. You did what she said.

I'm a frailer character than either of my parents. There was

HAPPY MEMORIES

Above: Andrew Garfield and Claire Foy as Jonathan Cavendish's parents in the new film *Breathe*. Right: Diana and Jonathan as they are today; left: as they were in the summer of 1959, months after Jonathan was born



Love



a tremendous fear in me that my father would die suddenly. I didn't see him frightened or depressed. He was all about putting everyone else at ease. The only time I saw my mother cry — out of exasperation — was when her mother gave her a kettle for Christmas, two years running.

My father could do nothing at all for himself, but in the world she created for him, he had control. He'd decide on the seating for lunch, he'd choose the menu and the wine. He was sociable, charismatic and determined to live fully. His voice had a particular purr when I said something that made him laugh. My normality was a dad who couldn't move, couldn't breathe unaided and yet genuinely wanted to be with me at all times. That

You had two minutes to start pumping oxygen or he'd be dead



made him incredibly unusual — most of my friends' fathers were quite stiff and they had difficult relationships.

Tid did a lot of the mothering, so my mother and I were more like brother and sister or friends. There was a strong bond between us all and there were no secrets — everything was huge fun. I would often sit on the bed watching my father having a blanket bath. He'd do a poo in a bedpan and we'd laugh about how smelly it was compared to yesterday's poo. There he was,

STRANGE HABITS

Diana

He leaves nice clothing everywhere — if he buys a jacket, he'll leave it on the back of a restaurant chair. And he has an annoying tendency to leave his shoelaces undone

Jonathan

She sniffs decisively before each statement she makes. Sometimes, if I need cheering up, I ring her answering machine to hear the pronounced sniff before she delivers her message

naked and vulnerable, but it wasn't scary because nothing was hidden.

I was conscious that my parents were as much in love at the end of my father's life as they had ever been, but it was a love that let me in. He decided to die in exactly the same way he had decided to live: when his body started to pack up, he asked my mother, my wife and me for permission to start drifting away.

My mother never wanted anyone other than my father for a single second. She's fiercely independent. Since he died in 1994, she's travelled all over the world, done a history degree and made new friends. She loves her grandchildren [Cavendish has 21-year-old triplets] and they adore her. I watch her with astonishment — last year was the first year she didn't go surfing. The film is her life and mine laid bare — it's about what happens if you're brave and confront a terrible situation with joy and fun, and at the centre of it all is the greatest love story I've ever known ■

Breathe is in cinemas now

Must I put my wife's long-term care ahead of my own happiness, a man asks *Emma Barnett*

Pushed to the limit



occasions where they need to see their father as a human being, not just their dad. You aren't telling them you no longer want to fulfil your duty to their mother; you are explaining the care you need.

It's a tough conversation to have. I understand why you feel afraid, but summon the courage and, crucially, the right tone. You will need their support to chart these foreign waters. Perhaps they will even help you traverse the brave new world of dating. It will take a graciousness on their part, but have faith in them. You may be pleasantly surprised.

I don't know you, but from only a few lines of correspondence I sense you are a good, soulful man who cares deeply about his family's welfare — yet for too long at the expense of your own. The moment is ripe to correct that balance. And remember, if she could, I'd bet your wife, as you first knew her, would be your biggest cheerleader in your bid to salvage some happiness from this unintended wreckage.

Like thousands of carers across the UK, you've found yourself cut adrift, married to someone no longer capable of a full relationship. You've been living in a cruel twilight. It's time to step back into the full life your wife dreamt of for you — long before your children were even thought of ■

@emmabarnett
Emma presents BBC 5 Live Daily,
Wed-Fri, 10am-1pm

Q I've been married for 40 years. My wife, who has never enjoyed good health, has mobility and other issues. I miss the intellectual and physical companionship of a woman. I feel too young and active to devote the rest of my life to being a carer. It's starting to have an adverse effect on my health. I'm afraid to raise the matter with my children as I don't think they will understand. What should I do?

A I am yet to breed, but I'm aware that the day I do will mark the end of me and my husband skipping out the door without a backwards glance. Our selfish days will be up.

I bring up my relatively carefree family existence in a

bid to remind you of a time pre-kids, when it was just you and your wife dreaming big about your lives together. I do this because the first conversation you need to have about your desire to explore other relationships isn't with your children — it's with her.

You haven't told me whether she is or isn't capable of taking that information in. If she isn't, you might still feel a word in her ear would be worthwhile as it was to her you pledged a lifetime of loyalty, in sickness and in health. Her blessing, tacit or otherwise, could yield peace.

Only once that exchange has happened should the one with your children occur. But this requires a different tack. Don't ask for their permission — more their blessing. This is one of those

Simon Barnes On a moonlit night in Zambia, I was humbled

It was the night of the silver elephants. The campfire at Chikoko Bush Camp in the South Luangwa National Park, in Zambia, was no more than a few embers when the guide, Amon Zulu, suggested that if I didn't get to my hut now, I might be held up for some time.

I was in staff quarters, co-leading the trip. My hut was made of straw and a good sneeze would knock it

down. The windows were gaps in the straw. The floor was sand. I sat on the canvas chair — I wasn't going to miss this.

The moon was a day or two short of full and you could have read your newspaper by it, had one ever reached so remote a spot. A dry sand river — strange to think I had once travelled down it by boat — passed just in front of my window and, on the far bank, a silver

silhouette against the midnight-blue sky: a female elephant, ears spread in all her African glory.

She waited till I had been still for a good 10 minutes and then came over. With her came another female, three-quarters grown, a half-grown male and a youngster, six or seven. They crossed the sand, silent on vast bedroom-slipped feet, pausing to dig for water on the river bottom. Then



My teenage daughters crave ever more piercings, but where should I draw the line, asks *Lorraine Candy*



Pierce pressure

Two years ago, at the age of 47, I had the top of my right ear pierced in Topshop. Breastfeeding aside, it was the most painful thing I've ever done. It hurt so much I took the earring out after six months, but my minor midlife crisis led to more than just sleepless nights and ridicule from my husband — I lost the right to refuse my teenage daughters' persistent piercing requests.

Not content with the two lobe piercings they both had at 12, they are on a mission for more. At the Friday-night teen gatherings in our front room there are so many piercings, it's like being at a Beth Ditto concert. It seems to be the norm for teenage girls to have as much pierced as they can. It's not just urban teenagers either: friends living out of town are dismayed by their adolescents' requests for nose, navel and eyebrow rings.

What was once marginal has become mainstream; a 2010 survey found that 35% of American women under 30 have a piercing somewhere other than their earlobes. Last month, the American Academy of Pediatrics produced its first advisory paper on body modification. It noted that where once adolescents with piercings may have been part of what it called the "high-risk population", such as those abusing alcohol or drugs, piercings are now accepted in families of every background.

The report's authors advise parents to raise the subject of

piercings and tattoos with children at the age of 11, just as you would begin the conversation about sex.

In Scotland, those under 16 must have parental consent for piercings, but there is no legal age restriction in England and Wales. It is up to the piercing parlours to determine who they subject to the needle (I had to sign a consent form for my daughters as they were under 16, but this doesn't seem to be standard practice). Likewise, schools apply their own rules on uniform and appearance.

Drew Povey, headmaster at Harrop Fold school, who featured in the Channel 4 series *Educating Greater Manchester*, asks parents to ensure any piercings are done at the beginning of the summer

holidays so the ear heals and the piercing can be removed during school hours in the autumn term.

"It is often a fine line between encouraging a corporate view and respecting the freedom of expression that teenagers feel in their desire to be different," he says.

That is the crux of the matter. Every generation wants to define a new look and this one loves piercings. I have agreed to two more earlobe piercings with my 13- and 14-year-old daughters, but I know they will want more. When I agree to this sort of thing I always alert other mums because a piercing request is contagious. It's funny how wanting to stand out and be different makes everyone do the same thing ■
@SundayTimesLC



HOLEY ORDERS

41%

of adults are in favour of an age limit of 18 for body piercing in England and Wales

YOUNGOV 2011

TOUGH LOVE ILLUSTRATION BY CECILE DORMIEAU FAMILY ILLUSTRATION BY BEN CHALLENGER, ALAMY



then rumbled — by the deep bass call of an elephant, just inches away



they climbed up the bank towards me and their footsteps exploded on the poppadom-crisp leaves around my hut.

Joy mingled with terror in about the right proportions. There was nothing to do but sit, refraining from sudden movement, and look. And listen: the sound of the coffee bush outside being haphazardly stripped, the munching of those grinding-stone teeth.

The matriarch and the youngster walked past the window so close I could have leant out to pat them. I could hear their flanks lightly brushing the walls of my hut. And then that elephant rumble: not a digestive sound as hunters used to believe but a vocalisation, in this context meaning, "I'm here. Where are you?" Comfort and security for the little one.

Not quite the same for me. The sound was as deep as the deepest note of an organ, and I wondered if the hut would shake to bits. Here was the perfect contradiction of our times: the luxury of feeling vulnerable in my infinitely fragile hut, while knowing that elephants and their world are vulnerable as never before ■
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The kitchen

The place where personality clashes can boil over

Mess, stress and chaos visit even the happiest kitchen sometimes – but it doesn't help when you're the bossy one in the relationship, writes **Pippa Byrne**

ILLUSTRATION: **JOSIE PORTILLO**

Every house has its own Kitchen Destroyer – someone who can't make a round of toast without staining every surface and dirtying every pot. Destroyers tend to be haphazard and bossy, inspiring a heady combination of mess and interpersonal aggro that is rarely seen outside of the gorilla enclosure at London Zoo.

Confession time: I know this because, in my house, I am the Destroyer.

It took me a long time to acknowledge the truth because I'm blessed with a very placid partner. He's the organised, level-headed Yin to my puppydog-eager, six-pricey-recipe-books-I've-never-read-on-the-countertop Yang.

I'm a solid pie, curry and spaghetti-bolognese-making kinda gal. He's the sort of person who buys fennel and knows what to do with it. It's incredible that the relationship works at all, in fact.

We Destroyers are impatient people in the kitchen – the only pace we find comfortable is our own. On stay-at-home date nights, my partner will happily spend half an hour slicing a single clove of garlic

with a razorblade, "So it melts into the sauce" (he saw this in *Goodfellas* and I suspect he thinks it's a bit sexy), while I simultaneously lose my patience and gain most of the bottle of red we were saving for dinner.

We're also disorganised folk. They've got fridges with cameras now so you can check what's in them while shopping, and I'm living proof they're necessary to the human race: I can never remember what groceries we've got, so I always double up. Because of me, poor, sad yoghurt pots live out their whole lives on our middle shelf, shuffling down an ever-increasing queue before heading to the bin without ever meeting a spoon.

Mind you, there are certain things I'm a stickler for. My man and I have a running battle over his storing tomatoes in the fridge while I, a civilised person, know that the correct place to keep them is in a countertop bowl. They get all icy and flavourless in the fridge like those joyless, freezing cold tomatoes you get in aeroplane salads. My toms will not suffer the same fate.



“

They've got fridges with cameras now and I'm living proof they're necessary to the human race



I also cook a little too hard. Ingredients are thrown around with abandon, splashing every surface in sight. I never clean as I go because I'm too caught up in a frenzied ballet between cupboard, oven and fridge.

I'll often stir my pots so hard and fast that half the food ends up on my clothes, the hob or the floor. I'd put it down to my fiery Italian passion for food, except for the fact that I'm Irish.

Another thing: just as it's not OK to burst in on surgeons or pilots for a chat while they're at work, I don't like to be interrupted when I cook. It doesn't help that our kitchen is about the size of an en suite bathroom, meaning two people fill the space so completely my partner has to breathe out so I can breathe in.

I need to be alone with the only beings that understand me: the appliances. They don't talk back, criticise my chopping style or stand exactly in front of the spot I need to put a sizzling pan of hot fat down.

Chaos in the kitchen?

Samsung's Family Hub™ fridge is also an organiser – so now you've got no excuse not to clear out that cupboard

It's not easy being the baddie, you know. I do yearn for change. I want to be one of those domestic goddesses who sort their pasta by shape into gleaming Mason jars, post kitschy homebakes on Instagram and dispense cleaning hacks willy-nilly to my girl friends. I long to be a floral-apron person, rather than a sauce-spattered-jumper person. I think the solution is to get some smart appliances to help me organise my life, do the dirty work and patiently hang back while I do my culinary Jackson Pollock thing.

In the meantime all I can do is thank my other half for his saintly patience (though to be clear, there is still no excuse for demonstrating that "saintly patience" every time I ask him to slice a single garlic clove).

In fact, reading back on all this, all the Destroyer can do is apologise and say, maybe you should cook this week, love.

THE REBIRTH OF COOL

Eye spy
Spare your poor yoghurt pots the pain of rejection: the Samsung Family Hub™ fridge keeps an eye on expiration dates. It also packs three built-in cameras that let you see what's inside from your phone via an app. Mmm, voyeuristic.

Basket case
Step an inch closer to domestic harmony by letting your fridge do the shopping. The Family Hub™ door-mounted touchscreen allows you to do the lot: sync multiple shopping lists and even order a pizza if you're feeling low-maintenance.

Play on, player
Bring your entertainment with you. The Family Hub™ app (available on Android and iOS) can hook up with other apps to stream music, radio and even mirror a compatible Samsung Smart TV in the other room.



To find out more about the Samsung FamilyHub™ and other smart appliances, visit www.samsung.com/uk/home-appliances

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My dad, the one-legged racing hero



David Walliams presents an exclusive extract from his latest children's adventure, in which a boy named Frank discovers that his dad — who lost a leg in a banger-racing accident — is about to become a getaway driver for the local crime boss



The lift was always broken in the block of flats, which was a pain when you lived on the 99th floor. Fortunately, Frank had devised a cool way of getting down the seemingly endless staircase. He'd found an old laundry basket and with felt-tip pens had painted it red, white and blue. All he had to do was sit at the top and let gravity take its course.

Whoosh!

Just as in a banger race, there were plenty of things to bash into. It was hard to steer the basket, but Frank did his best to lean *left* and *right*, narrowly missing a broken-down washing machine, an upturned shopping trolley, a flock of pigeons, a TV that had been kicked in, a delivery driver carrying a stack of pizzas, a crate of empty bottles and a tiny old lady who was being dragged up the stairs by three little dogs.

The washing basket rattled down the last few steps and skidded across the concrete.

Whizz!

Eventually, it came to a stop. The boy hid the basket behind some bins, and then dashed off in the direction of the local pub, the *Executioner and Axe*. As he peered in through the grimy window, Frank saw the pub was heaving. Try as he might, the boy couldn't spot his father anywhere.

Just as he was about to give up and head home, Frank heard muffled voices coming from the

car park. The boy turned to see some men sitting talking in a white Rolls-Royce. It stuck out, not just from its bay because of its size, but also because it was the kind of expensive car you *never ever* saw on an estate like this.

He could just see the outline of his dad sitting in the driver's seat. But who were the other men?

To try to hear what was being said, Frank climbed onto the roof of the plumber's van parked next to the Rolls-Royce. But all he could hear was the occasional word. It sounded as though the men were talking quietly so as not to be overheard. So, as delicately as he could, Frank stepped from the top of the van onto the roof of the Rolls-Royce and lay down so he could hear what was being said. This would turn out to be a dangerous mistake.

"What if we get caught?" It was Frank's father speaking. Get

"If you ever do anything to hurt my boy, I'll..."

"You'll what?" snarled the man. "Take off your false leg and kick me with it?"

caught doing what, thought Frank.

"If you drive fast enough, no one will get caught," replied a man. "I have done all the research. You will be in and out in two minutes."

"I ain't sure about this. It's much *bigger* than you told me. Just let me pay you back the money I borrowed. *Please?*" said Dad.

"I've heard that one a million times before from you."

"I will find a job."

"There are no jobs in this town, especially for someone who has to hop to get around."

There was a rumble of mocking laughter from the two men in the back seats. *"Ha! Ha! Ha!"*

"You love your boy, don't you?" said the man. Frank gulped. He was talking about him.

"Yeah, yeah, of course I do.

I love him more than anything in the world. What's he got to do with all this?"

"I would hate for anything to happen to him."

"You leave my boy out of this!"

"Then do what I say."

"If you ever do anything to hurt my boy, I'll..."

"You'll what?" snarled the man in the passenger seat. "Take off your false leg and *kick* me with it?"

The two men in the back laughed again. *"Ha! Ha! Ha!"*

"All right, all right," said Dad.

"I'll do what you say. But just this once. One job, and *then I am done.*"

"That wasn't too hard now, was it?" purred the man. "So, Gilbert, I want you to show me that you can still drive, like in the old days."

"I can still drive all right. Leg or no leg."

"Then show me."

"Are you ready?"

"Yes."

"Hold on tight," replied Dad.

The huge Rolls-Royce engine revved up. *Brum, bruumm, bruummm!* Then the back wheels spun furiously, and clouds of smoke filled the air. Frank couldn't help but splutter at the smell of burning rubber. The boy struggled to his feet so he could jump back on the van. But Dad was much too quick for him. The Rolls-Royce raced off into the night *with Frank standing on the roof!*

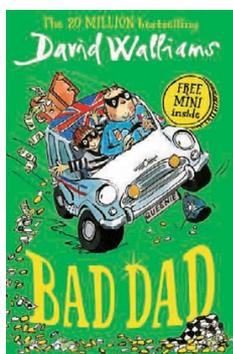
Frank clung on for dear life. The Rolls-Royce had spun out of the pub car park and in no time was speeding down the road at 100 miles an hour. The boy's eyes were watering and his hair was sticking up on end. This was the most dangerous fairground ride of all





ONLINE EXTRA

Hear an exclusive extract of David reading from *Bad Dad* at the thesundaytimes.co.uk/magazine



Extracted from *Bad Dad* by David Walliams, illustrated by Tony Ross (HarperCollins Children's Books £12.99) out on Thursday

time. Of course, Dad had no clue that his son was clinging on to the roof. If he had, the man would never have: driven straight through a red light... *Whizz!* Swerved sharply to overtake a bus... *SCREECH!* And crashed through a fence... *BASH!* Before speeding through the park.

Just as he dared to open his eyes again, Frank saw that they were heading straight for another fence on the far side of the park.

Kaboom!

Planks of wood *exploded* into the air. A large chunk whizzed past the top of Frank's head.

The car was heading straight towards an alleyway, which was much narrower than the car itself. If Dad didn't put on the brakes right now, it looked as though the Rolls-Royce would smash slap-bang into a brick wall.

"STOP!" shouted the man in the passenger seat. "ARGH!" screamed the pair in the back. Instead the car's engine revved and sped up. "NOOO!" came shouts from inside.

Frank couldn't take it any more. On one side of the alleyway was a pile of planks of wood. The Rolls-Royce turned sharply and

the wheels on the left side mounted the planks and it vaulted onto two wheels!

Frank opened his eyes again as he found himself sliding down the side of the roof. His fingers desperately clawed to get a grip. Still on two wheels, the car just made it through. *Whizz!*

Bursting out of the other side of the alley, Dad turned the steering wheel sharply and the car bounced back down to four wheels. *Boink!*

Just as Frank breathed a sigh of relief, a siren blared.

NEE-NAW! NEE-NAW!

Blue shadows flashed on the buildings around them. The boy looked over his shoulder. A police car was chasing them.

Dad put his foot down on the accelerator and the Rolls-Royce whizzed off the wrong way down a main road. Frank couldn't believe his eyes. The car was weaving in and out of the traffic coming straight at them! Lorries and cars swerved as Dad managed to twist and turn just in time.

It was thrilling and terrifying all at once. Up ahead, a wall of flashing blue light was travelling rapidly towards them. It was the *POLICE!*

They were driving in formation, blocking out the whole road. There was no way round them. There was no way under them. There was no way through them. *They were trapped.*

Dad was a champion race driver, but surely even he could not win this time. However, instead of slowing down, Dad sped up. Between the Rolls-Royce and the wall of police cars was a huge lorry. The lorry's trailer was one that transported cars, though right now it was empty. The lorry driver must have panicked at seeing this

car speeding straight towards him, as the vehicle spun round dramatically in the middle of the road — *SCREECH!* — and came to a halt.

Dad seized his chance and sped towards the back of the lorry. The ramp for loading cars was down. The Rolls-Royce powered on, straight at it. *Brum!* It hit the ramp and raced up it. When it reached the top the Rolls-Royce took off and flew through the air. *Whizz!*

The boy could feel his heart beating in his chest. *BOOM! BOOM! BOOM!* It was beating so hard it felt as if it was going to burst out of him. Time slowed down and sped up all at once. Frank was flying. He wanted it to end right now. *He never wanted it to end.*

The Rolls-Royce soared over the line of police cars, just clipping the roof of one with a back tyre on the way down — *Crunch!* — before it crash-landed on the road behind the wall of cars with a huge *BUMP!* Frank thought he was going to be hurled into the air as the car *bounced* down the road like a football.

The boy just managed to grip on to the roof of the Rolls-Royce. In no time, the car righted itself and sped off down the road. Frank looked over his shoulder to see the chaos his father had caused.

The policemen were struggling to turn their cars round, but as they had stopped in tight formation, they had blocked themselves in. The police cars bashed into each other as they attempted to give chase.

BASH! CRASH! CRUNCH!

Despite nearly dying a hundred times, the boy couldn't help but smile. His hero of a dad had done it again ■



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Feed mind, body and soul with a balanced approach to nourishment

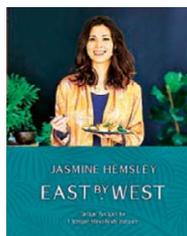
All together now



Jasmine Hemsley

We are not necessarily what we eat. We are what we digest, absorb and assimilate — physically, emotionally and mentally. I have a long-held fascination with digestion and the critical role it plays in gut health, not only for our immune system but for the health of our mind and body as a whole. Enter ayurveda, the 5,000-year-old holistic practice that understands that our vitality, wellbeing and happiness come from a life in balance, and that the secret to maintaining this balance lies in the strength of our *agni*, or “digestive fire”.

It is our food choices, daily routines and connection to the environment that dictate the balance of the physical, mental and emotional states we enjoy (or don't enjoy) every day. And it was these “don't enjoy” days that fuelled my desire to make wellbeing a priority. As my commitment to this field grows, the more I am convinced that the new health rules are actually the old ones — 5,000 years old, in fact. Every meal is an opportunity to fortify your body and boost energy.



East by West: Simple Recipes for Ultimate Mind-Body Balance by Jasmine Hemsley is published on Thursday (Bluebird £25)

1

Sesame-roast chicken with savoy cabbage and tomato gravy

Fragrant with sesame, ginger and cardamom, this is a Sunday roast with a twist. It's served with a spiced tomato gravy, which lifts this usually heavy dish and makes it deliciously fresh. Apart from the gravy, the meal is cooked in one big roasting tray, allowing the flavours to merge for a chilled-out lunch — and saving on the washing-up.

SERVES

4 people

INGREDIENTS

2 *tblsp* ghee
4 *chicken thighs*, bone in and skin on
2 *small shallots*, halved and peeled,
or ½ *leek* or 1 *medium onion*,
roughly chopped
250g *carrots*, cut into 2cm lengths
600g *turnips*, cut into 2.5cm wedges
½ *tsp* grated lemon zest
1 *tblsp* sesame seeds
½ *savoy cabbage*, sliced into ribbons

For the tomato gravy

2 *tblsp* ghee
2-3 *cloves* of garlic, minced
200g *tomatoes*, skinned and deseeded
2 *bay leaves*
Seeds of 4 *cardamom pods*, ground
1 *tsp* ground cumin
1.5cm *piece* of fresh ginger, chopped

01 Heat the oven to 180C (200C non-fan). Place 1 *tblsp* ghee in a large roasting tray. Add a pinch of salt and pepper and place in the oven to heat for a few minutes. In a large bowl, toss the chicken thighs, shallots, carrots and turnips with the remaining ghee, lemon zest and ¼ *tsp* each of salt and pepper.

02 Remove the roasting tray from the oven and arrange the shallots, carrots and turnips so they are evenly spread out. Place the chicken thighs on top, skin side up, then return the tray to the oven and roast for about 30 minutes, turning the vegetables halfway through. When cooked, the chicken juices should run clear and the vegetables will be tender.

03 Meanwhile, toast the sesame seeds in a dry saucepan until golden and fragrant. For the last 10 minutes of cooking, scatter the cabbage ribbons and toasted sesame seeds over the chicken and vegetables and return to the oven.

04 In the same saucepan, make the tomato gravy. Melt the ghee and stir through the garlic and tomatoes. Sauté for about 2 minutes, then add the bay leaves, cardamom, cumin and ginger. Pour in 85ml water and bring to the boil. Cook the gravy for about 20 minutes, then remove the bay leaves and blend in a food processor until smooth. Taste, adjust the seasoning, and keep warm until ready to serve.

05 Plate up the chicken thighs, then toss the vegetables in the juices in the tray and serve drizzled with tomato gravy.

TIP If you like your chicken skin crispy, place the roasting tray under the grill for a few minutes before serving.



PHOTOGRAPHS BY NICK HOPPER

A man with short brown hair, smiling broadly, is wearing a dark blue zip-up jacket over a blue and white checkered shirt. He is holding a large, woven wicker basket filled with fresh, bright orange carrots. The basket is lined with white paper. The background is a vast, open field of golden-brown crops under a clear blue sky with some light clouds. The overall scene is bright and sunny, suggesting a late afternoon or early morning setting.

BEN, THE 'FANTASTIC' CARROT MAN

Ben is obsessed with carrots. In winter, he protects them under a blanket of straw until they're ready to be harvested fresh from the field. It's how he makes sure they're at their best for Tesco all year round. His dedication to quality is what gives them their delicious crunch and flavour. Try them raw in a salad or roasted with honey and thyme to bring out their natural sweetness. You'll soon see what makes both Ben and his carrots fantastic. Pick up a pack in store or online.

Food Love Stories

TESCO

Every little helps



2

The Dish

Zac'n'cheese with basil courgettes

This is a great meal to make from scratch. Thanks to the red split lentils, it all comes together quickly without any prep. It's comforting, filling and just rich enough. Don't be put off by the long list of spices — it's worth it. Along with the lentils, the cottage cheese gives this dish a protein boost and makes a thick, mellow sauce with the addition of carrots and smoked paprika. Serve with sautéed cabbage.

SERVES
3 people

INGREDIENTS
200g brown rice penne or other pasta
2 tbsps butter
2 cloves of garlic, crushed
100g red split lentils, rinsed

3 medium carrots, grated
1 tsp smoked paprika
2 tsp Dijon mustard
1 tsp apple cider vinegar
200g full-fat cottage cheese
2 pinches of ground white pepper
2 pinches of ground nutmeg (optional)
65g sunflower seeds
40g pecorino or parmesan, grated
Black sesame seeds, to decorate (optional)

To serve
2 large courgettes, sliced into rounds
Extra-virgin olive oil, for drizzling
Handful of fresh basil, torn

01 In a medium pan, cook the pasta until just al dente (follow the packet instructions but reduce the cooking time by a minute or so). Drain and set aside.

02 In the same pan, melt the butter and sauté the garlic for a few minutes. Add the lentils, carrots and paprika, then pour in 500ml water and simmer, lid on, for 20 minutes until soft. If the mixture is very runny, allow to

simmer for a few minutes more with the lid off.

03 Add the Dijon mustard, apple cider vinegar, cottage cheese, the white pepper, 4 pinches of freshly ground black pepper, 1 tsp sea salt and the nutmeg, if using. Blend until smooth, then taste and adjust the seasoning. The sauce should be smooth — if it seems too dry, add a splash of water.

04 Fold in the cooked pasta, then transfer everything to an ovenproof dish (about 20cm x 16cm), smoothing it over with the back of a spoon.

05 Sprinkle over the sunflower seeds and pecorino. Top with black sesame seeds, if using, and grill for 5 minutes until lightly browned.

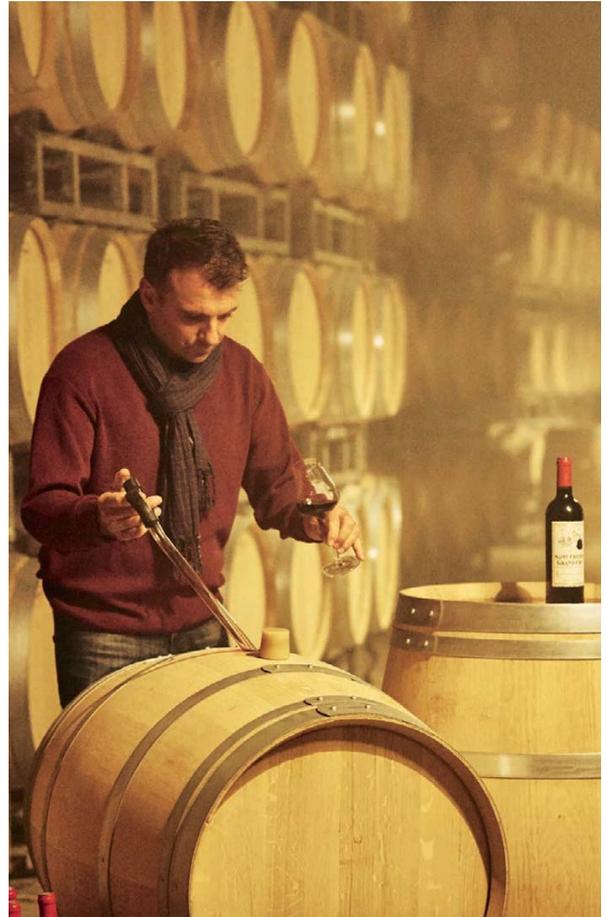
06 Meanwhile, dry-cook the courgette slices in a cast-iron frying pan until tender and browned, then transfer to a dish, drizzle with olive oil, season lightly and cover with torn basil.

"The best grapes, in the best oak barrels, make Saint-Emilion Grand Cru."

Serge, winemaker of our award-winning Saint-Emilion Grand Cru at £10.99

A lot of passion goes into producing the deep, full-bodied, vanilla oak accents of our Saint-Emilion Grand Cru. Winemakers like Serge carefully analyse the best hand-picked Merlot, Cabernet Sauvignon and Cabernet Franc grapes from across the region. This intricate balance combined with the unique soil and oak barrel ageing elevates the wine to 'Grand Cru' status - capturing the essence of Saint-Emilion in every bottle.

Watch the film at lidl.co.uk/lidlsurprises



#LidlSurprises

3

Pink peppercorn lamb hotpot with sautéed red cabbage and mint

Inspired by Lancashire hotpot, this dish celebrates one-pot low and slow cooking. The recipe renders a medley of ingredients, including tougher cuts of meat, into a melt-in-the-mouth, easy-to-digest dish. I've added pink peppercorns, one of my new favourite flavours in the spice pantry. As lamb can be fatty, I serve this hotpot with a sautéed red cabbage salad, its pink colour a nod to the peppercorns.

SERVES

6 people

INGREDIENTS

500g diced lamb, mutton neck fillet or shoulder
1½ tbsp butter, melted, plus extra to grease
½ large butternut squash, peeled and cut into 5mm slices
150g turnips, cut into 5mm slices
1½-2 tbsp pink peppercorns, crushed
4 sprigs of thyme, leaves picked
2 bay leaves
1 large leek, sliced into 5mm rounds
500ml bouillon

For the red cabbage

1 tbsp ghee
1 tsp black mustard seeds
300g red cabbage, thinly shredded
15g-20g mint leaves, chopped
½-1 tbsp lemon juice

01 Heat the oven to 150C (170C non-fan). Season the meat lightly with sea salt and freshly ground black pepper.

02 Butter a 24cm high-sided casserole dish and arrange one third of the sliced butternut squash and one third of the turnips in the



The Dish

bottom. Season with a little of the pink peppercorns and sprinkle with thyme. Place the meat and bay leaves on top and season in the same way, followed by the leek, also seasoned in the same way.

03 Arrange the remaining slices of squash and turnip on top of the leek like overlapping fish scales, and season with salt and pepper. Pour over enough stock to just come up to the base of the topping, then brush with the melted butter.

04 Cover and bake for 2 hours, then uncover and bake for another

30-40 minutes, until the top is golden and crisp.

05 About 10 minutes before the end of the cooking time, prepare the sautéed red cabbage. Heat the ghee in a large frying pan and add the mustard seeds. Sauté until they pop and are fragrant, then add the cabbage and sauté for 10-15 minutes until just tender, adding 1-2 tbsp water if the pan gets too dry. Toss through the other ingredients, season with salt and freshly ground black pepper, and serve immediately with the hotpot ■

MASTERING THE CLASSICS

It's a piece of cake

Bake Off favourite Selasi Gbormittah shares his simple secrets to make a light and delicious Victoria sponge

Selasi Gbormittah has a very simple philosophy when it comes to baking: "Don't cry over it, if you went wrong this time, just grab a spoon, eat it – and better luck next time." It's this laid-back approach which helped to make him one of *Bake Off's* most popular non-winners (he left the show at the semi-final stage in 2016 after presenting soggy-bottomed palmiers).

Selasi, who grew up in Ghana, came to baking late, when he was at university in the UK. "I knew my way around the kitchen but I'd never baked. The first thing I tried making were cupcakes and they were more like rock cakes! I practised over and over until I was happy with them.

"For me, Victoria sponge is an extension of this classic cupcake bake. When you first start out, it's the cake

“*This has the elements for a great bake: jam, cream, cake. What's not to like?*”



PHOTOGRAPHY: GEMMA DAY

you try. It has all the perfect elements for a great bake: jam, cream, cake. What's not to like?" Since those early efforts, Selasi has mastered the art of classic British baking and always follows some basic rules:

- Prepare everything at the start: make sure the oven is preheated for at least ten minutes, the cake tin lined, the ingredients laid out – this way you'll avoid over-mixing the dough.
- Take your eggs out of the fridge well in advance – if they're cold, the butter might curdle. Everything should be at room temperature

but no warmer – if the butter is too soft, you will end up with an oily and dense sponge.

- Get into the habit of beating the butter and sugar together for at least five minutes. It's always best to use caster sugar if you want an extra light sponge, as the fine crystals incorporate more air into the mixture. I like to use Billington's Golden Caster Sugar as it adds a subtle buttery caramel flavour to the bake.
- Always beat the eggs separately before adding them and sift the flour.

Billington's classic Victoria sponge



Ingredients

175g Billington's Golden Caster Sugar
 Billington's Golden Icing Sugar for decoration
 175g butter
 3 medium eggs
 175g self-raising flour
 Strawberry jam
 200ml double cream
 Fresh strawberries or blueberries (optional)

Method

- Preheat the oven to 180C (200C non-fan)
- Cream the butter and caster sugar together
- Add the egg, a little at a time, to the creamed mixture, beating well
- Sift in the flour and fold in lightly. Divide the mixture into two greased and lined sandwich tins (18cm/7in)
- Bake for 25 minutes until risen and golden brown
- Cool in the tins for about a minute, then turn out on to a wire rack until cold
- Sandwich the cakes together with the jam and cream (and some sliced strawberries/blueberries)
- Sift the icing sugar over the top and, if using, decorate with berries

For more recipes visit bakingmad.co.uk



These tangy treats will get sticky fingers coming back for seconds

Scarily moreish



Candice Brown

Toffee apple pastries

These sweet, tangy pastries are perfect to serve warm on Halloween. You can make them in advance, then heat them for 5 minutes in the oven to crisp up. I use a mix of bramley and eating apples for the different tang levels, but play around with this as you please — pears work well, too.

MAKES
8 large or 12 small

INGREDIENTS

For the caramel

60g unsalted butter
60g light brown soft sugar
50ml double cream

For the pastries

1 large bramley apple and 3 eating apples (I use braeburn), peeled, cored and cut into small chunks
50g dark brown soft sugar
A knob of unsalted butter
1 cinnamon stick
1 star anise
500g ready-to-roll puff pastry
1 egg for egg wash
25g flaked almonds
Apricot jam, to glaze

01 To make the caramel, place the butter and sugar in a pan and melt over a medium heat. Allow the sugar to dissolve, then turn the heat up slightly so the mixture starts to bubble and foam. Remove



from the heat, then whisk in the double cream. Set aside to cool.

02 Place the apple chunks in a medium saucepan with the sugar, butter, cinnamon and star anise. Over a low-medium heat, melt the butter and sugar together so the apples start to soften and toffee forms. Do not let the apples turn to mush — they need to hold some of their shape. Allow to cool, remove the spices and set aside.

03 Heat the oven to 180C fan (200C non-fan) and line two baking trays with parchment.

04 On a lightly floured surface, roll out the pastry into a rectangle

measuring 40cm x 20cm at 5mm thick. Cut it into either eight large squares or 12 smaller pieces.

05 Spoon 2 tsp of the cooled apple mix into the centre of each pastry. Beat the egg in a bowl and paint egg wash around the edges with a pastry brush. Roll up the corners of each pastry and push down to seal. Sprinkle over the flaked almonds.

06 Place the pastries on the baking tray and bake for 20-25 minutes, until they are puffed and golden. Remove from the oven and leave to cool slightly on a wire rack, then glaze with warm apricot jam and drizzle over some of the caramel. Serve warm ■

The Dish



TIMES+

An evening with Prue Leith

An exclusive opportunity for subscribers

Join us on Wednesday, November 22 for an evening with The Great British Bake Off judge, Prue Leith, as she talks to Matt Rudd about her incredible appetite for life as captured in her eye-opening memoirs *Relish: My Life on a Plate*.

Book tickets now at mytimesplus.co.uk

THE  TIMES
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Table Talk

‘Don’t for God’s sake order the food’

JD Wetherspoon
Ramsgate



Marina O’Loughlin

Twitter these days is generally regarded as a disaster, infested by verified Nazis and narcissistic man-children threatening nuclear war. I continue to like it: hugely useful if you have any kind of, ah, niche interests. And every now and then it throws up the perfect way to lose an afternoon. Recently, the writer @laurenbravo asked: “What’s the literary/cultural reference you use most often despite not having actually read the book or seen the film? Mine’s *Miss Havisham*” — which resulted in confessions involving Kafka, Pinter, mad women in attics, portraits in attics, madeleines, Lolitas and *Catch-22s*.

What was mine? Not literary fraud, I realised, but culinary. Despite frequently using it as shorthand for all that’s bad about “British” food and chain catering, I’d never eaten in a Wetherspoon’s. Other restaurant pundits have praised the place, so perhaps my prejudice is unfounded. Could it be that Spoon’s is as great as its fans maintain? With the opening of a mammoth new branch in Ramsgate, Kent, right now couldn’t be a better time to get



FROM THE MENU

Pepperoni pizza
£5.99

Whitby breaded
scampi £7.29

Quinoa salad with
chicken £8.25

Fried buttermilk
chicken burger (with
a soft drink) £6.49

Barbecue pork ribs
£9.25

TOTAL

For two, including
12.5% service,
without drinks
£42

JD Wetherspoon,
Royal Victoria Pavilion,
Harbour Parade,
Ramsgate, Kent CT11
8LS; 01843 854420,
jdwetherspoon.com

For a 360-degree view
inside the UK’s biggest
JD Wetherspoon, visit
the *SundayTimesFood*
page on Facebook

over myself. It’s not only the biggest JD Wetherspoon in the UK, it’s probably the biggest pub in the country, the size of a small hamlet, a titan among boozers.

The company took Ramsgate’s mouldering but beautiful Royal Victoria Pavilion and transformed it to the tune of £4.5m into a basic nirvana: all the vomitous carpets, hastily erected wood panelling, fruit machines and reproduction art a cheap beer devotee could desire. (Wetherspoon’s carpets have a book devoted to them. Each carpet “tells a story”. I wish this one would pipe the hell down.)

The vast space — capable of holding nearly 1,500 customers — is mobbed. I’ve brought a Spoon’s fan for fairness and context; she tells me this (4pm on a sunny Sunday afternoon) is the wrong time to come: “It’s all families and sad old men.” We’re told brusquely on arrival of a 40-minute wait for food, which gives me plenty of time to study the menu, complete with calorific values. This seems like institutionalised lunacy when, for example, a side of “Topped chips” with cheese, bacon and sour cream — “We call them ‘dutty chips’,” beams the Spoon’s fan — weighs in at 1,422 calories. It’s a Project Fear of a menu.

A man at a neighbouring table is piling into pepperoni pizza, onion rings and chips, combined count 2,513 calories. This is what he signed up for, consequences be damned. We order that pizza: it’s dumped onto the table so it skites off its plate. I suppose it’s all the

respect this oily number deserves.

Admittedly, it’s a while since I’ve eaten breadcrumb scampi — they don’t tend to feature in the restaurant critic’s diet. Still, I’m pretty sure they weren’t always like this: stiff orange coffins emitting an ooze of vaguely fishy goo. Their peas somehow have a haunting backnote of fag ash.

Look, I know that asking for quinoa and chicken salad (a restrained 653 calories) is perverse. But since it doesn’t feature much cooking, I figured it might be safe. And I’m 2017 enough to appreciate the “clean eating” box-ticking. But I have never met avocado you can squeeze and it simply bounces back, like sponge. How? How? The quinoa and rice are weirdly purple and sticky from adzuki beans, the chicken has all the allure of impacted cardboard, the whole thing a penance for not just getting with the programme and hitting the burgers.

But there’s not much joy there, either: “Fried buttermilk chicken burger” (598 calories) delivers a flat, damp sandwich secured with a wooden skewer, as if its flabby contents are in any danger of escaping from their woolly bun. “I like it,” says the Spoon’s fan. Probably the best dish we order is a mixed grill on the grounds that — fag-ash peas and pasty, superprocessed banger excepted — it’s not actively unpleasant. And the worst: a “side” of ribs (who orders a side of ribs?), the meat pappy and exhausted, the barbecue sauce as sugary as ➤➤➤



**DON'T SAY VINEGAR
SAY SARSON'S**

*Sarson's flavour develops over 7 days in wooden vats compared to most other malt vinegars produced in 24 hours using stainless steel acetators.

the sort of thing you might scoop out of the bottom of Hannibal Lecter's recycling bin.

We endure two pitchers of cocktails — SF: "Purple rain makes you wee, mojito gets you pissed" — that taste of Calpol and diabetic coma. I note the values for these are by the glass and for alcohol only: calories per jug would probably make the "dutty chips" look like restraint.

Aaaaanyway. It turns out that, when it comes to Wetherspoon's, I'm no convert. But I'm happy to own it: snobbery about food means that the chains and moneymen with their spreadsheets and battery chickens won't always win. I've been skint, soul-destroyingly so. But even then, I wouldn't have eaten here; I'd have crossed the road to Peter's Fish Factory and the honesty of hot, salty chips made from, you know, fresh potatoes.

Afterwards, I go to a properly good pub nearby (the Ravensgate Arms, detail fans) and talk to a nice middle-class chap who says that people who criticise the chain are coming from a position of — yasss! — snobbery. Wetherspoon's is good for the community. It renovates historic buildings. And there's no reason why "these people" shouldn't have nice places to go.

Dear Lord, where do I start with this? Far from being good for the community, this one has already sucked, like a giant cosmic Hoover, a lot of life from nearby businesses. I live in a neighbouring town and know the harbour-facing parade well: on a sunny weekend, it usually bristles with drinkers. Today, it's virtually deserted. Or that historic buildings argument? This isn't about community, or heritage, but profit — a glorious edifice bought for buttons from a council who couldn't afford to repair it themselves, by a multimillionaire Leave donor who's now complaining he can't get the staff. Or the phrase "these people"? And it's me who's the snob?

Yes, it's cheap. But, to quote my mama, I wouldn't give you tuppence for it. This is cheap not because it's good value, but because it's nasty. At least I can now slag it off from a position of authority. The terrace that wraps around this ravishing piece of seaside architecture is quite the place to sit with a pint, looking out to sea. But only if you smuggle in your own picnic. Don't, for God's sake, order the food ■



HUNGRY FOR MORE

THE ST TUDY INN, CORNWALL

Rustic and atmospheric, with a fire and a wide selection of hearty local beers and ale, St Tudy is a fine pub. The kitchen dishes up all the classics, such as ale-battered gurnard. *St Tudy, Cornwall PL30 3NN; 01208 850656, sttudyinn.com*



Big wines that go with a bang



Will Lyons

Next weekend, many of us will wrap up warm to spend an evening huddled around a huge bonfire as we remember the plot, led by Guy Fawkes, to blow up the House of Lords on November 5, 1605. Bonfire night is the time for

wines that provide comfort and warmth, that marry with the wild smells of wood smoke, charred sparklers, the scent of sodden leaves and damp ground. That's why I have included a madeira, a sweet, nutty, fortified wine that frequently has faint aromas of smoke and dried fruit.

But this is also a time for full-bodied, robust wines that keep you toasty and soak up the tasty finger foods in your other hand. Here, I have chosen three from the southern hemisphere whose dark-fruit intensity will light up anyone's evening ■



1

1 2014 FRANKLAND RIVER SHIRAZ

MARKS & SPENCER, £11

Western Australia

This robust, opulent example from the Great Southern region is packed with rich, ripe fruit and has a rounded, soft finish. Keep it to hand while standing around a blazing fire, munching on a sausage roll.



2

2 2013 DE MORGENZON DMZ STELLENBOSCH SYRAH

THE WINE SOCIETY, £8.50

South Africa

Lying just outside Stellenbosch town, De Morgenzon is known for chenin blanc, but this syrah is well worth hunting out. Plenty of ripe, generous fruit is offset by pepper and spice.



3

3 2014 WARWICK FIRST LADY CABERNET SAUVIGNON

SAINSBURY'S, £8

South Africa

Warwick is one of South Africa's leading estates and this is what they describe as a "drinking red". Dark plum in colour, with inviting notes of damson, it's a smooth match with meat fresh off the grill.



4

4 BLANDY'S ALVADA 5-YEAR-OLD RICH MADERIA

WAITROSE, £13.49

Portugal

Before the bonfire, fill a hip flask with this nutty madeira. Produced on the volcanic island from malmsey and bual grapes, it has warming notes of dried fruit, tobacco and apricot.

The Dish



The Clarkson Review: Porsche Panamera Turbo

An absolute must if you're all out of lust



CONTACT US

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Jeremy Clarkson

The oddest thing about getting old is that you start to lose interest in style. You look at a pair of zip-up slippers on a market stall and think: "Mmmm. They look warm and comfy and they're only a fiver so I shall buy them." And it never occurs to you that they are even more hideous than the tartan shopping trolley you bought the previous week.

Old people have a similar attitude to everything. They buy furniture because it's easy to get in and out of and don't seem to

notice that it's upholstered in the material used to paper the walls in the local takeaway.

They see no reason to buy water with a lemon zest when they can get pretty much the same thing for a lot less from a tap. And why spend all that money on a snazzy telephone when you can talk to anyone in the world from the Bakelite set on the hall table? This is all because old people are not very interested in sex.

When a young person examines a new pair of shoes, they will not really care how much they cost or how many Vietnamese children were killed in the sweatshop where they were made, just so long as they look good. Because looking good is an essential first step on the road to procreation.

When you are choosing a book to read on a beach, you are, of course, tempted to buy the latest

Jack Reacher tome. But you suspect that passers-by will clock you as a moron, so instead you choose something about ancient Rome. And when you are hanging pictures in your living room, you know that a poster of a Lamborghini Countach won't do. So you go for something curious and weird instead.

Sex is behind every single thing we choose to buy: the cigarettes we smoke, the beer we drink and certainly the cars we drive. There's a tiny bit of our brain that is constantly saying: "Yes, I know it does five thousand miles to the gallon and only costs 10p but it'll make me look like a dork."

All of which brings me neatly to the door of Porsche's new Panamera. Yes, I know I've driven this before, and reviewed it on these pages, in fact. But that was a review written after a two-mile

As you sit there pressing buttons, you feel just like Star Trek's Mr Sulu

Continental. It's a completely different V8, with its turbocharging based between the cylinder banks. And it's also fabulous. Really fabulous. It's quiet and unruffled most of the time, but when you poke it a bit, it makes a deep, growly noise like a dog having a dream.

Naturally there is a great deal of power, all of which is fed to all four wheels by an ingenious arsenal of algorithms that makes sure no matter what you do, the car always feels planted and secure. It also feels sprightly, because much of it is now made from aluminium. That's why the door is so light.

All of which make the gigantic brakes look like overkill. These are the sort of discs you like to envisage being used to bring an Airbus A380 to a halt. You imagine when you lean on the pedal that you are actually altering space-time in a measurable way. And on my test car they were carbon ceramic, which meant they could go on affecting nature all day long without fading.

Make no mistake: this is a wonderful car to drive. And it doesn't feel even remotely like a large five-door hatchback with a boot big enough for a trip to the garden centre, folding rear seats and (just) enough room in the back for two adults. It even rides properly, so everyone is always comfortable.

However, there is a problem. Yes, it's better-looking than its predecessor, but that's like saying it's better-looking than a gaping wound. It's still a long, long way from being even remotely handsome or appealing. And to make things worse, my test car was painted the sort of red that speedboats go in New Zealand after they've been in the ozone-free outdoors for a couple of years. And to make things worse still, that's an optional extra for which Porsche charges almost £3,000.

No one is going to buy this car for its looks, which means it will just be bought by people for whom sex is no longer important. Which makes a change from the usual Porsche customer, I suppose ■

cursory glance around the cockpit for something that might shut it down, but there seems to be nothing. And then you remember saying to your mum that you can't find your shoes and her saying: "Have you looked properly?" So you have a more careful look. You go into all the menus on the control system and you put on your reading glasses and you crawl about in the footwell.

And finally you resort to Google, where you discover the button is... Actually, I'm not going to tell you where it is. It's a good game to while away a couple of hours next time you're bored and passing a Porsche showroom. Get the salespeople to make you a cup of tea while you ferret about. It'll serve them right for hiding it away so thoroughly.

Eventually, the steering wheel had cooled down sufficiently for me to drive the car, and I won't beat about the bush. It was sublime. There are three engines on offer: at one end is a diesel that will give you an astonishing range of 800 miles between fill-ups but will cost you £10,000 a minute to park because various councils have changed their minds and decided diesel is the work of the devil. At the other is a bloody great V8 turbo that you can park for sixpence because somehow that's OK these days.

Strangely, it is not the very fabulous V8 that Porsche's parent company, Volkswagen, uses in the Audi A8 and the Bentley

Head to head

Porsche Panamera Turbo v Audi RS 7 Sportback



Price
£115,100 vs £94,185

Fuel
30.4mpg vs 29.7mpg

Power
542bhp vs 597bhp

0-62mph
3.8sec vs 3.7sec

Top speed
190mph vs 155mph



drive on inappropriate roads in Mallorca while I was suffering from pneumonia. This is an actual review, written after an actual drive and while I feel well.

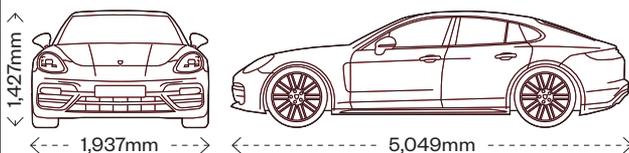
You open the Panamera, you step inside and immediately you are consumed by a desperate need to buy one. You are less cocooned than you were in the previous model, but you still have a sense of being hemmed in place by the extremely light door and the enormous transmission tunnel. This sense of being cocooned is one of the things that made the old Porsche 928 so desirable.

And the transmission tunnel isn't enormous just for show. It's big because it houses all sorts of interesting buttons. All of which operate with the satisfying sense that they are fully German.

Then you have a widescreen television, which allows you to operate all the things that can't be controlled with the buttons to your left. You feel, as you sit there pressing stuff, that you are Mr Sulu on the bridge of the Starship Enterprise. Except your hands are hotter. Much hotter.

This is because you've turned on the heated steering wheel. You don't know how you've done this, but you know that if you don't turn it off quickly, all the skin on your hands will melt. You have a

The Clarkometer Porsche Panamera Turbo



Engine 3996cc, V8, turbo, petrol	Fuel / CO₂ 30.4mpg / 212g/km
Power 542bhp @ 5750rpm	Weight 1,995kg
Torque 567 lb ft @ 1960rpm	Price £115,100
Acceleration 0-62mph: 3.8sec	Release date On sale now
Top speed 190mph	Jeremy's rating ★★★★☆



BEAST OF A VEHICLE: Mark Beaumont with his Skoda Kodiaq, named after an Alaskan bear

Me and My Motor

The round-the-world cyclist Mark Beaumont rides his luck with cars

Mark Beaumont has just pedalled all the way around the world in less than 80 days — most of the way with a broken arm. The 34-year-old Scotsman fell off his bicycle near Moscow on day nine but had no idea he'd suffered a hairline fracture until he had completed his mammoth trek.

Beaumont came off three times during the 18,000-mile ride, finally crossing the finishing line in Paris last month after 78 days, 14 hours and 40 minutes. Averaging 240 miles a day, he beat the previous record, set by a New Zealander in 2015, by more than 44 days.

"There's a perception that all cyclists hate cars but I've been mad about driving ever since I was a kid," Beaumont says. "I've had a few close shaves riding my bike; the worst was in 2008 when I first held the world record for a bicycle circumnavigation, in 194 days."

He was riding in Louisiana when a driver hit him. "I went over her bonnet and smashed the

windscreen. She was so upset, although not as sore as me. I had breakfast with her the next day to prove there were no hard feelings."

His latest trek took him across Europe and Asia, through Australia and New Zealand, then America and Canada. The final leg was from Portugal to Paris. He ate 8,000 calories a day and averaged 16 hours in the saddle. "All I want to do now is sit on a comfy chair and enjoy some normal time in Edinburgh with my wife, Nicci, and our two young daughters, Harriet and Willa," he says.

Beaumont grew up on a farm in Perthshire, surrounded by forests and hills. "Mum and Dad were organic farmers in the 1980s, before it became trendy. I spent a lot of time helping them, as well as cycling and climbing."

Home-taught by his mother, he didn't go to school until secondary age. "It was quite a shock travelling 30 miles to Dundee High every day. There were 1,200 children and lots of concrete. I was used to wearing overalls and wellies, so I was bullied quite a bit at first."

He learnt to drive as soon as he could reach the pedals of the family Land Rover. Then his parents bought a £60 Ford Fiesta so he could hone his skills on the farm. "I was 12," he laughs. "I used my father's angle grinder to cut off the front and back wings. It looked like something from Mad Max."

A rusty Volkswagen Polo

followed, until the engine and gearbox fell out. His first car after passing his test was a Land Rover Defender that repeatedly broke down. Later, when studying economics and politics at Glasgow University, he spent £300 on a Rover 75. "It was quite a terrible car. I put £5 of petrol in at a time because I had no money. That car became famous for running out of fuel but it meant me and my friends could get around."

Beaumont was by now an accomplished distance cyclist. After university, he made his first record circumnavigation, raising £18,000 for charity. "As a result of that trip, Orange offered me £20,000 to appear in a TV commercial. I held out for £35,000 and realised I could make a living from my adventures. Rather foolishly, I spent it all on a new Volvo XC70."

His next ride, in 2010, was from Alaska to Argentina, covering 13,080 miles in 268 days. The following year, he was part of a crew that rowed across the Canadian Arctic.

"Infiniti took an interest in me in 2012 and I was given a QX70 SUV as my first sponsored car. When they stopped making that model I teamed up with a local car dealership to drive the new Skoda Kodiaq. It's named after the Alaskan bear — so far I haven't met any of them on my rides." ■

Interview by Jeremy Taylor

Driving



MY LIFE IN CARS

1995

Ford Fiesta Mk 1



1997

VW Polo Mk 1



2000

Land Rover Defender



2002

Rover 75



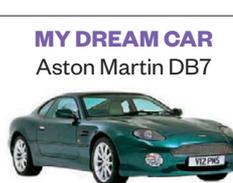
2012

Infiniti QX70



2017

Skoda Kodiaq
(main picture)



MY DREAM CAR Aston Martin DB7

Bullying on social media is rife, but apps that promote positivity among youngsters anonymously are helping the fightback and growing fast

Boom time for happiness

In association with Audi



Danny Fortson

Like other anxious parents, I've watched with dismay as the internet has turned into a cesspool. But technology is great at solving problems — including those it creates. Hence a raft of new apps about generating positivity aimed at young people.

Among the latest is Brighten. It sends anonymous, positive messages such as "You're my idol, man" or "You smell of honeysuckle" (it's Californian).

Brighten was thought up by Austin Kevitch, a student from Pennsylvania, in 2013. A close friend, Oliver, died in a climbing accident, and his Facebook page was filled with positive remembrances. "I wished Oliver could've read those messages while he was alive," Kevitch says.

More than 10m messages have been sent by Brighten's 1m users, many of whom are in secondary school and college. Brighten is

chasing the success of TBH, which last month became the most downloaded free app on the App Store in America. Then Facebook bought it for "under \$100m". The company was two months old.

TBH is like Brighten, though its approach is more game-like. It asks which of four friends — gleaned from your contacts — are "Hotter than the sun" or "Most likely to be an astronaut". The app lets the chosen friend know that someone — it doesn't say who — has selected him or her as the winner.

Should we be surprised that positivity is a booming business? It's the obvious antidote to social media bullying, which caught on because it's easy to be nasty when there are no repercussions. Apps that pay compliments use that very anonymity in a different way.

Scoff you may, but these apps could indeed be a force for good, especially for teenagers who exist through their phones. Yes, even in Britain, where — as I can testify, being an American who worked in the UK for many years — giving a compliment free from sarcasm, and disentangled from a thicket of qualifiers, is, well, just not the done thing.

@dannymfortson

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DON'T PANIC: YOUR PROBLEMS SOLVED

How can I print text messages from my Android phone?

C.J. Cavendish, Suffolk

You need to copy the messages and print them from another program. You could take screen grabs (pressing the Power and Volume Down buttons together works for most Android phones), save a text thread to the camera roll and then print the image. You could copy and paste texts into an app you can print from; or convert them into emails using, say, the free Text to Email app, where messages are forwarded as plain text or PDFs. If you have the Gmail app, open the email and tap the three dots in the top right to see printing options.

Matt Bingham

Apps to change your life Become an art expert



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Free, Android, Apple

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The Zagorje region resembles Austria with its vineyard-covered hills and compact villages, while nestled in the pastoral hills of the Lika is perhaps Croatia's most extraordinary natural feature: the captivating Plitviče Lakes – a stunning sequence of pristine pools linked by magnificent waterfalls – famously featured in virtually every list of 'must-see' destinations. Selected departures from April to October 2018.

Selected departures from April to October, 2018.

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- See the breath taking Plitviče Lakes, a UNESCO-listed site and truly unmissable sight
- Experience the stunning Istrian peninsula with its sun-kissed, vineyard-clad hills and an undeniable Venetian influence left by past rulers
- Enjoy guided tours of two of Istria's remarkably preserved towns: Pula with its astonishing Roman amphitheatre and Poreč with its striking Euphrasian Basilica
- Discover the Zagorje region and its most charming towns: Marija Bistrica, home to Croatia's most important pilgrimage site; and elegantly Baroque Varaždin
- Explore Rovinj, perhaps the most beautiful fishing harbour in the Adriatic
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DAY 3: THE ZAGORJE

This morning we drive through the picturesque Zagorje region, stopping in two of its most fascinating towns: Marija Bistrica, home to Croatia's most important pilgrimage site, and elegantly Baroque Varaždin.

DAY 4: PLITVIČE LAKES & IČIĆI

Departing Zagreb, we journey to the breathtaking Plitviče Lakes, where pristine pools are linked by cascading waterfalls. After a boat trip to admire the views, we continue to Ičići on the Istrian peninsula. We stay here four nights with dinner.

DAY 5: PULA, ROVINJ & POREČ

Today we explore some of Istria's most charming towns. Enjoy guided tours of Pula with its Roman amphitheatre, and Poreč with its Euphrasian basilica. We also visit Rovinj, perhaps the most beautiful fishing port in the Adriatic.

DAY 6: FREE DAY IN IČIĆI

You have a full day to relax or explore the lovely harbour town of Ičići.

DAY 7: CRES & KRK

Today we visit two of Croatia's idyllic islands, Cres and Krk, and explore several Venetian influenced towns.

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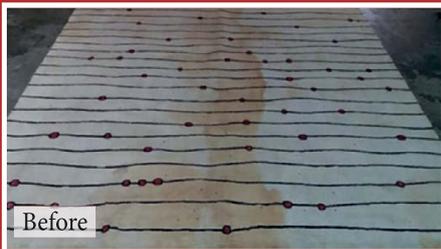
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A life in the day

Fearne Cotton

The TV presenter on depression, foot rubs and hanging out with Keith Richards

Cotton, 36, grew up in Hillingdon, west London. She attended Haydon School and in 1996 started her career as a presenter on GMTV's Disney Club, aged 15. She hosted shows on Radio 1 for a decade until 2015, and has since published five books. She is married to Jesse Wood, 40, guitarist with the band Reef and son of Ronnie Wood of the Rolling Stones. They live in southwest London with their children, Rex, 4, and Honey, 2, and Jesse's children from his previous marriage, Arthur, 15, and Lola, 11.

“Mornings start at 6.30am and tend to be chaotic. We're a four-kid household, with everyone getting up at different times, wanting different things for breakfast and fighting over the TV. Go back 10 years and I'd have been out getting hammered and going to bed at that time, but now mornings are my favourite part of

the day. My husband, Jesse, and I embrace the chaos and we'd miss it if it wasn't there. My life has changed so much in the past decade. Everything used to be focused on work and worrying about how to live; now the focus is on the children. My day works around them.

Once things have calmed down, I grab a coffee and a slice of toast. There's usually music playing while we're all getting ready for the day: a lot of stuff from the 1960s and 1970s — Neil Young, Fleetwood Mac, the Beatles. And the Stones, of course. People make a thing about being related to Ronnie Wood, but, to me, it's just family. He's my husband's dad and our kids' brilliant grandad. It can be weird, watching him on stage, or talking to Keith Richards after a gig. There is still a bit of me that goes: "Hang on, that's Keith. It really is Keith."

If I'm at home all day, I have strict rules — no make-up, no bra, jogging bottoms and a T-shirt —

unless I'm going out for a jog: probably a good idea to put a bra on. We live right by the Thames. When Jesse was working over the summer, the rest of us would go on nature walks in the park or head into central London. It's important to remember that even a train journey is exciting for smaller children. Be excited with them; rediscover your sense of wonder, even if you're on a packed train to Waterloo.

The kitchen is the engine of our home and I spend 90% of my time there. I've experimented with lunches that all of us can enjoy — spaghetti bolognese or pesto, pasta and peas tick all the boxes. If there is a quiet hour or two in the afternoon, I try to do a bit of writing. After I left Radio 1, I was worried about what I was going to do for a job, but working at home gives me the best of both worlds. I can still be creative, but I'm not missing the kids growing up.

Writing about my depression earlier this year was very cathartic and I've not regretted it for a second. The number of girls and young women who've been in touch with me is incredible. Mental-health issues can leave you feeling isolated and that won't change unless we start talking and listening. I hope future generations are better at dealing with their emotions than we are.

The house starts to fill up again around 5.30pm. I insist that we all sit down as a family for dinner, but phones and iPads are a frequent distraction. We're not a vegetarian family, but we don't eat much meat. There are a lot of vegan stews and casseroles. Jesse doesn't touch alcohol and I haven't had a drink for months. It's not easy to deal with a hangover when you've got small children.

After the kids are in bed, we flop out on the sofa and chat and chill. Maybe we'll listen to a bit of Nina Simone or Bob Marley. If we want to treat ourselves, a local lady comes over and does a bit of reflexology; it always makes us sleep better. When I get to bed, I can't help smiling to myself: Ronnie Wood's son and his wife — and yet the most rock'n'roll part of our day is when a lady comes over to massage our feet ■

Interview by Danny Scott
Yoga Babies by Fearne Cotton
(Andersen Press £9.99) is out now



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THE LIGHT THAT NEVER GOES OUT

In the first of a new series on how technology is taking inspiration from our five senses, Audi explores the link between innovation and sight with a feast for the eyes – the world’s first living chandelier. **Ally Farrell** reports

After dark in London’s Victoria and Albert Museum. The doors are locked, but the nightwatchmen and occasional mouse are not alone. A strange new resident – part *Invasion of the Body Snatchers* pod, part Laliqie centrepiece – is hanging at the foot of a grand staircase. It is *Exhale*, a “bionic chandelier” powered by living algae.

Standing under its eerily iridescent petals is the man who designed – or should that be gave birth to? – this stunning creation, the engineer and designer Julian Melchiorri.

“It is a mix of different technologies,” he explains. “It’s bio-technology, it’s mechanical engineering, there are electrical components, hydraulics and soft robotics.” In other words, according to Melchiorri: “It’s not just a chandelier with some green slime in it.”

Exhale harnesses the millions of microorganisms that make up algae not only to cast light but to support life using one of the oldest chemical processes on earth, photosynthesis.

“I believe that 80 per cent of our experience of reality comes from sight

Activated by a combination of LED and daylight, the algae purify the air by absorbing carbon dioxide and releasing oxygen. “Without light we wouldn’t see, or experience, anything,” says Melchiorri. “I believe that 80 per cent of our experience of reality comes from sight. If we use technology to change how we see, we can change our reality.”

Melchiorri has a background in lighting design and is focused not only on sight but a vision – a radical view on how design can combat climate change and waste, led by his company, Arborea. It’s a crusade that has won him high praise and saw the V&A commission this unique new guest – he is the museum’s first ever engineer in residence.

“Three-and-a-half-billion years ago, these same microorganisms created all the air that we now have,” he says. “The chandelier itself exhales oxygen as a waste product, which is inhaled by humans. We get its waste, and it feeds on our waste, carbon dioxide. So there is a constant exchange as in nature,

but this time between a living object and a human being.”

A living chandelier is only part of a wider trend, according to Melchiorri. “Design is slowly merging with nature. More and more we’re seeing the influence of natural structures in technology, and the use of microorganisms that can perform tasks to help both people and the environment. They’re like micro-engines that can do very complex things at very high speeds.”

For Melchiorri, *Exhale* is merely the tip of the iceberg for living light sources. “Even in architecture, you could have a building that would basically breathe, purifying the air for street level and bringing oxygen to the people,” he says. “Everything is possible with this.”

Exhale really comes into its own after dark, once its microorganisms have consumed their fill of carbon dioxide and sunbathed in daylight. You might say that *Exhale* is waking up as darkness falls, after no doubt dreaming of technology and nature in perfect harmony.

MAKING SENSE OF OUR SENSES

We cannot control the weather or other drivers, but we can use our senses to react in the optimal manner. Over the coming weeks we introduce inspiring individuals who are pushing the boundaries

of technology and how we can use this to enhance our senses. As Audi continues to integrate “Vorsprung durch Technik” across the range, together we look at how innovation is changing lives.



SIGHT

The ‘living’ chandelier, see above



TASTE

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