

**SATURDAY 06 OCTOBER 2018**

**SAT 19:00 Monkey Planet (p01s0z7y)**  
Family Matters

The key to primate success is that, like us, most species live in close-knit family groups. How do you choose your friends, learn from those around you and know who to trust? We explore the complex world of primate social lifestyles.

In Peru, emperor tamarin males are coned into childcare, while vervet monkeys in South Africa have a sophisticated alarm system to warn for predators. Elsewhere, George has a very close encounter with some hunting chimpanzees.

But living in families is not always easy. In Gibraltar, barbary macaques steal babies to impress their boss. Hamadryas baboon males in Ethiopia rule with an iron fist, and in matriarchal ring-tailed lemur societies, the girls have to fight pitched battles with babies in tow.

**SAT 20:00 Big Cats (b09pzcg9)**  
Series 1

Episode 3

Scientists are studying cats in more detail than ever before, and what they are discovering is truly groundbreaking. Join the scientists in the field, testing new theories and challenging the conventional ideas about cats. New approaches and new technologies are allowing an intimate look at their previously hidden lives.

This new age of discovery is revealing there is still so much to learn about the cat family. Using high-tech collars, Professor Alan Wilson has discovered it is not straight-line speed that is a cheetah's greatest weapon but their ability to brake, change direction and accelerate. His research is rewriting what we understand about the fastest animal on land.

This is also a crucial time for cat conservation - most are threatened, facing extreme habitat loss and conflict with humans. Yet there are many positive stories of cats bouncing back from the brink, showcasing the tireless work of cat conservationists fighting to protect them. Just five years ago the Iberian lynx was considered the rarest cat on the planet.

Now, due to a groundbreaking captive-breeding programme, lynx numbers are increasing in the wild. A huge amount of effort is going into breeding and releasing these stunning cats, and all the hard work is now paying off.

**SAT 21:00 Mystery Road (b0bn8ntt)**  
Series 1

The Waterhole

A corpse in a sacred spot dredges up a past crime for Emma, while Jay's daughter Crystal helps him to a fresh discovery.

**SAT 21:50 Mystery Road (b0bn8ntw)**  
Series 1

The Truth

Jay finally learns what happened to Marley and 'Reese' but suspects a deeper motive than drug dealing, and he disturbs Emma with a further revelation about the cattle station.

**SAT 22:45 Inside No. 9 (b03w7w6x)**  
Series 1

Tom and Gerri

Tom is a primary school teacher with ambitious ideas of becoming an author. When he tries to repay a good turn from a late-night caller, he gradually becomes the victim of his own generosity.

**SAT 23:15 Inside No. 9 (b03wy9kx)**  
Series 1

Last Gasp

Tamsin is a very sick little girl, so Jan and Graham asked WishmakerUK to brighten up their daughter's birthday. The charity is bringing along a very special guest indeed - none other than the legendary singer Frankie J Parsons.

**SAT 23:45 I'm Not In Love: The Story of 10cc (b06r14pr)**  
In celebration of the 40th anniversary of smash hit I'm Not in Love, the original members of 10cc - Graham Gouldman, Eric Stewart, Kevin Godley and Lol Creme - reunite to tell their

story. The documentary shares the secrets to some of their most successful records, from the writing and the recording to the tours and the tensions.

With contributions from an impressive array of music industry legends including 10cc's band manager Harvey Lisberg, lyricist Sir Tim Rice, broadcaster Paul Gambaccini, legendary producer Trevor Horn, Stewart Copeland (The Police), Graham Nash (The Hollies) and Dan Gillespie Sells (The Feeling), not only does this film highlight the diversity of these four brilliant musicians' songwriting talent, but it also delves into the influence they had, as well as the politics beneath their acrimonious split in 1976, at the height of their fame.

**SAT 00:45 Top of the Pops (b0bm6svx)**

John Peel and Janice Long present this pop chart programme, first broadcast on 29 May 1986. Featuring Doctor and the Medics, Robert Palmer, The Real Thing, Tears for Fears, Pete Dinklage, Spitting Image and Peter Gabriel.

**SAT 01:15 Top of the Pops (b0bm6tdn)**

Pop chart programme. Simon Bates and Gary Davies present the pop chart programme, first broadcast on 5 June 1986. Featuring Cashflow, Simply Red, Pet Shop Boys, Doctor and the Medics, Genesis, Nu Shooz and Jaki Graham.

**SAT 01:45 Monkey Planet (p01s0z7y)**

[Repeat of broadcast at 19:00 today]

**SAT 02:45 Big Cats (b09pzcg9)**

[Repeat of broadcast at 20:00 today]

**SUNDAY 07 OCTOBER 2018**

**SUN 19:00 Engineering Giants (b0119m3h)**

Gas Rig Strip-Down

Engineer turned comedian Tom Wrigglesworth and Rob Bell, rising star of mechanical engineering, tell the story as an entire North Sea Gas installation, the Lima Platform, is pulled from the sea by floating cranes, brought back to Newcastle, and then torn into tiny pieces for recycling.

But the platform is not just thousands of tons of steel. It was once home to the men and women called the North Sea Tigers. They pioneered gas and oil exploration in the UK and now some of them are ending their careers as part of the decommissioning process. As the gas platform is stripped down, these engineers reveal the secrets of this vital part of our energy supplies, but they also reveal the emotional bonds to the engineering marvel that formed such an important part of their lives.

**SUN 20:00 James May's Cars of the People (b06z98lc)**

Series 2

Episode 1

James reveals the cars that turned postwar Germany and Japan into motoring powerhouses at the expense of Britain and the US.

On his travels he encounters classic E-Types, Mustangs and the German and Japanese upstarts that were to conquer the world.

He also has an unfortunate encounter with an Austin Allegro - the car that helped destroy the British car industry.

**SUN 21:00 Cold War, Hot Jets (b03h8r3y)**

Episode 1

Britain emerged from the Second World War in financial crisis, but one technological innovation provided hope for the future - a world-leading jet aviation industry. During the Cold War, the jet engine became a lucrative export and a powerful piece of military hardware, but selling to the wrong buyer could alter the balance of power.

**SUN 22:00 Feud: Bette and Joan (p051115I)**

Series 1

Mommie Dearest

After Joan asks Bette to stop her daughter from corrupting her own twins, a truce seems on the cards when both actresses reveal hardships in their lives, but hostilities break out again when Joan is unable to prevent Hedda Hopper from publishing a story about Bette's drinking.

**SUN 22:50 Feud: Bette and Joan (p05111zn)**

Series 1

More or Less

Having wrapped Whatever Happened to Baby Jane?, both Bette and Joan are disappointed when their respective agents are not receiving the offers they had anticipated, as the word on the street is that the film will bomb. Even the director is not confident of a success as he prepares the print for the first out-of-town preview.

**SUN 23:35 Wonders of the Great Barrier Reef with Iolo Williams (b0btzbn)**

On the other side of the world under the crystal clear blue waters of the Pacific Ocean lies one of the most enchanting places on the planet. Over ten thousand miles away on the north eastern coast of Australia lies the Great Barrier Reef, one of the natural wonders of our world. It provides shelter to some hidden wildlife sanctuaries that contain some magical marine creatures.

Invited on a reef adventure by Emmy Award-winning underwater cinematographer and marine biologist Richard Fitzpatrick, conservationist and naturalist Iolo Williams dives deep beneath the surface of the coral sea to discover what state this natural wonder is in. Together they travel from the extreme swells of the northern part of the reef right down to the cooler pristine corals of the south. They discover how healthy the Great Barrier Reef really is in some of its key locations to see and find out if there are real signs of hope the reef can survive the threat of global warming.

**SUN 00:35 Treasures of Ancient Greece (b05rj5xj)**

The Long Shadow

Alastair Sooke explores the extraordinary afterlife of the Greek masterpieces that changed the course of western culture. Succeeding centuries have found in ancient Greek art inspiration for their own ideals and ambitions. Filming in Italy, Germany, France and Britain, Alastair's investigation includes The Venus of Knidos, the first naked woman in western art, the bronze horses of St Mark's in Venice which became a pawn in an imperial game and the naked discus thrower, the Discobolus, personally bought by Adolf Hitler and used by him as a symbol of Aryan supremacy.

**SUN 01:35 Andre Previn at the BBC (b06gxxxh)**

Charismatic conductor and composer Andre Previn looks back at some of his greatest television moments, from thrilling performances of orchestral favourites by Mozart and Berlioz to his classic comedy encounter with Morecambe and Wise.

**SUN 02:35 James May's Cars of the People (b06z98lc)**

[Repeat of broadcast at 20:00 today]

**MONDAY 08 OCTOBER 2018**

**MON 19:00 Beyond 100 Days (b0blv8h6)**

Series 1

08/10/2018

Katty Kay in Washington and Christian Fraser in London return to report on the events that are shaping the world.

**MON 19:30 Venice 24/7 (b01d26ls)**

Winter in Venice

With unprecedented access to Venice's emergency and public services this series goes behind the 15th-century facades to experience the real, living city. From daily emergencies to street sweeping, bridge maintenance to flood defence systems and a death-defying descent across St Mark's Square, this is Venice as you have never seen it before. This is Venice 24/7.

Venice is masked by sheets of snow. The emergency services negotiate choppy waters to deal with daily hazards as well as life-and-death emergencies. There is a sunken boat to save, an elderly lady with a suspected stroke and, in this city built on wood, the most dreaded call of all - fire. We see how Venice deals with thousands of tonnes of rubbish, turning it into power which is fed back into the city. Venice may be over 1,000 years old, but staying afloat requires 21st-century innovation.

**MON 20:00 South Pacific (b0015j10)**

Strange Islands

Flightless parrots, burrowing bats, giant skinks and kangaroos in trees; on the isolated islands of the South Pacific, the wildlife has evolved in extraordinary ways. But island living can carry a high price, for when new species arrive all hell breaks loose. And there lies a puzzle - why do animals perfectly adapted to

island life simply give up the ghost? The answer is revealed by the remarkable stories of some unlikely animals that survived on tiny islands off the coast of New Zealand. The human history of the region is further evidence that, however idyllic it may appear, life on a South Pacific island may never be very far from catastrophe.

**MON 21:00 Return to TS Eliotland (b0bn6tr1)**

AN Wilson explores the life and work of TS Eliot. From the halls of Harvard University to a Somerset village, via a Margate promenade shelter, he follows the spiritual and psychological journey that Eliot took in his most iconic poems. From The Love Song of J Alfred Prufrock to The Waste Land and from Ash Wednesday to Four Quartets, Wilson traces Eliot's life story as it informs his greatest works.

Wilson travels to the places that inspired them, visiting Eliot's family's holiday home on the Massachusetts coast, following the poet to Oxford, where he met and married his first wife, Vivien Haigh-Wood, and on to London. He explores how Eliot's realisation that he and Vivien were fundamentally incompatible influenced The Waste Land and examines how Eliot's subsequent conversion to Anglicanism coloured his later works. Wilson concludes his journey by visiting some of the key locations around which the poet structured his final masterpiece, Four Quartets.

Eliot's poetry is widely regarded as complex and difficult; it takes on weighty ideas of time, memory, faith and belief, themes which Wilson argues have as much relevance today as during the poet's lifetime. And whilst hailing his genius, Wilson does not shy away from confronting the discomforting and dark side of his work - the poems now widely regarded as anti-Semitic.

**MON 22:00 Storyville (b0bn6tr3)**

Jailed in America

For director Roger Ross Williams, prison was not a distant possibility when he was growing up, but a daily threat. 'As a young black man in a chaotic environment, I always felt there was a chance that, whether or not I committed a crime, I could end up behind bars.' Determined to avoid this fate, Roger left his hometown of Easton, Pennsylvania as a teenager to pursue his dreams of being a film-maker. Overcoming the odds, he became the first black director to win an Academy Award. As his success grew, he thought about Easton less and less, until the day he heard about the suicide of his old friend Tommy Alvin.

Now, after 30 years, Roger returns home to pay his respects and reconnect with close childhood friends. He is shocked and distressed to learn virtually all of the men in the Alvin family are, have been, or currently are, in prison. Haunted by how easily this could have happened to him, Roger embarks on a deeply personal journey into the heart of the American prison system to try and understand how this is possible. He starts in his own hometown but soon finds himself navigating a Byzantine maze of powerful institutions: police precincts, courtrooms, local jails, maximum security prisons and corporate empires. As he begins to explore a massive and dysfunctional system, he encounters complicit politicians and prison profiteers, each with their own self-serving motivations to maintain the status quo.

Roger discovers prison administrators who recognise that most of their inmates should be free, yet are helpless to release them. He seeks counsel and knowledge from frustrated community leaders and activists, including the tireless Adam Foss. Foss's mission is to personally reeducate America's 31,000 prosecutors to 'cut off the supply' of people flowing into the system, and also try and save lives in his own neighbourhood, one young man at a time.

Roger comes face to face with the endless hoard of Americans trapped behind the walls of the prison industrial complex and the families struggling to survive on the outside. He searches for solutions within the tangled web of political, social, and economic forces that drive the biased system, which has ensnared so many of his friends.

The film is a reckoning with America's conscience and a rebuke, not just of power and greed, but of silence - the stain of comfort, wilful ignorance of real costs. Roger's pursuit of an answer propels the film to examine all strata of the American society - from the free market ideals that America is founded upon to the savage ways in which the country has manifested those ideals. In Roger's view, there is no single villain and no obvious solution. Real change requires a new philosophy across a spectrum of industries. Not just the reining in of corporate influence but reform in political, financial, legal, educational and mental health care spheres as well. What can Roger offer? To return home and take a long hard look at the human toll. Will viewers look away as he once did? At what price?

**MON 23:00 Horizon (b05vn777)**

2014-2015

**70 Million Animal Mummies: Egypt's Dark Secret**

Investigating the use of modern medical technology to scan Egyptian animal mummies from museums across the world. By creating 3D images of their content, experts are discovering the truth about the strange role animals played in ancient Egyptian belief.

This episode of Horizon also meets the scientists working in Egypt who are exploring the ancient underground catacombs where mummies were originally buried to reveal why the ancient Egyptians mummified millions and millions of animals.

**MON 00:00 Capability Brown's Unfinished Garden (b07xt6t9)**

Capability Brown is known as the founder of landscape design. In the 1700s, he created some of the most magnificent landscapes in England. He travelled the length and breadth of the country, improving more than 200 of the greatest estates in the land for some of the most influential people of the 18th century.

But there is one plan that never got off the drawing board. The only land he ever owned was in Fenstanton, Cambridgeshire, but he died before he could carry out any plans for his own garden. Today it is a piece of flat land bisected by the A14 dual carriageway.

Landscape designer and Gardeners' Question Time regular Bunny Guinness travels across England to some of Capability's finest landscapes - Blenheim, Burghley, Milton Abbey and Castle Ashby - to understand what he might have created. Rediscovering plans and letters, and using the latest technology, Capability Brown's unfinished garden is brought to life.

**MON 01:00 Bought with Love: The Secret History of British Art Collections (b037nhb9)**

The Age of the Individual

Helen Rosslyn explores how collecting reached its maturity in the 19th century when unprecedented wealth from Britain's booming economy encouraged enlightened, philanthropic industrialists to spend their fortunes on art, and in many cases then donate their collections to the nation.

With different taste from the British aristocracy who had dominated collecting to this point, a new breed of art buyer enriched Britain's cultural story by acquiring adventurous and often avant-garde work. Helen looks at the influence of pharmaceutical magnate Thomas Holloway, the Rothschild banking dynasty and the Welsh Davies sisters.

**MON 02:00 South Pacific (b0015j10)**

[Repeat of broadcast at 20:00 today]

**MON 03:00 Return to TS Eliotland (b0bn6tr1)**

[Repeat of broadcast at 21:00 today]

**TUESDAY 09 OCTOBER 2018**

**TUE 19:00 Beyond 100 Days (b0bmp70w)**

Series 1

09/10/2018

Katty Kay in Washington and Christian Fraser in London return to report on the events that are shaping the world.

**TUE 19:30 Venice 24/7 (b01dc66q)**

Carnival

With unprecedented access to Venice's emergency and public services, this series goes behind the 15th-century facades to experience the real, living city. From daily emergencies to street sweeping, bridge maintenance to flood defence systems and a death-defying descent across St Mark's Square, this is Venice as you've never seen it before. This is Venice 24/7.

One of the most famous events in the Venetian calendar is Carnevale. This ancient tradition, meaning 'meat is allowed', celebrates all things decadent in the run-up to Lent. Kicking off celebrations is a 400-metre descent from St Mark's campanile by a young Venetian girl. There is a tourist who has had a suspected drug overdose, a beauty pageant, undercover police hot on the tail of thieves and a dead body found near St Mark's Square. In a season where anything goes, the emergency teams have their work cut out reining the city in.

**TUE 20:00 The Medici: Makers of Modern Art (b00fzt19)**

Documentary in which Andrew Graham-Dixon reveals how the Medici family transformed Florence through sculpture, painting

and architecture, and created a world where masterpieces fetch millions today.

Without the money and patronage of the Medici we might never have heard of artists such as Donatello, Michelangelo or Botticelli. Graham-Dixon examines how a family of shadowy, corrupt businessmen, driven by greed and ambition, became the financial engine behind the Italian Renaissance.

**TUE 21:00 Life Story (p026vhj2)**

Series 1

Home

Animals must find somewhere to live - a place that provides the necessities of life, shelter from the elements and a refuge from enemies. Good homes are rare and competition can be intense - finding a home is one thing, but defending it is quite another. Home for a pack of African hunting dogs is a vast plain in Zambia. But it's far from safe. They must protect their young from predators and battle their age-old enemy, the hyena. Hermit crabs on an isolated tropical island make their homes in empty snail shells. But there is a severe housing shortage. When a new property washes ashore the crabs form an orderly queue, in order of size. It's a housing chain. When the chain is complete each crab moves into the newly vacated shell ahead of it in the line. Chimps have made a home on the edge of the Sahara Desert. They only survive by knowing how to find water even in the most extreme droughts. The elders lead their troop on a brutal trek to a dried-out riverbed. Once there they know exactly where to dig to create wells.

**TUE 22:00 Greece with Simon Reeve (p03gk861)**

Episode 2

In the second episode of this two-part series, Simon Reeve travels from the Peloponnese peninsula to the rugged and mountainous north of the country.

To learn more about Greece and the Greeks, he meets an extraordinary cast of characters, from a group of rebel monks to conservationists caring for an injured bear cub. Getting behind the picture-postcard image of this beautiful country, he finds out how the Greeks are coming to terms with a seemingly endless crisis.

**TUE 23:00 Dara & Ed's Road to Mandalay (b08qmgbc)**

Series 1

Thailand

In Thailand, Dara and Ed fly into Phuket and experience an island that is sinking under the weight of booming tourism. They meet up with a local environmentalist campaigning to protect Phuket's wildlife and help out at a turtle conservation centre, returning two turtles to the sea.

Moving on to the mainland, Dara and Ed travel to the capital city of Bangkok, which recently became the most visited city in the world. They are invited to a supper club, where they find out how the locals are reacting to the explosion in foreign visitors. Travelling out of the city on a rice barge, the boys arrive in the ancient Thai capital of Ayutthaya and visit its ruins before Ed takes up Muay Thai boxing for a day. Following the backpackers, the boys then board the night train to Chiang Mai, stop for a Thai massage and see how the city has adapted to life on the tourist trail. As they head towards the north of Thailand, Dara and Ed see some of the positive changes that tourism is bringing. They visit the Hmong hill tribe who have transformed their traditional go-karting track into a fee-paying attraction for tourists, bringing in some much needed dollars.

Finally, they end their journey in the Golden Triangle at a sanctuary for elephants that have been rescued from Thailand's logging industry. Here the income generated by a purpose-built, eco-friendly tourist resort is funding the welfare and future of the elephants and their handlers.

**TUE 00:00 Rococo: Travel, Pleasure, Madness (b03slvhy)**

Pleasure

Following the grandeur of Baroque, Rococo art is often dismissed as frivolous and unserious, but Waldemar Januszczak disagrees. In this three-part series he re-examines Rococo art

and argues that the Rococo was actually the age in which the modern world was born. Picking three key territories of Rococo achievement - travel, pleasure and madness - Waldemar celebrates the finest cultural achievements of the period and examine the drives and underlying meanings that make them so present.

Waldemar looks at the pursuit of pleasure in the Rococo age, to which a huge amount of cultural energy was devoted. For the first time in history, pleasure and happiness were seen as unalienable human rights that everyone was free to pursue and is reflected so poignantly in the art of Boucher, Watteau, Gainsborough and Tiepolo. In its boundless search for delight it often went too far, but, put crudely, Rococo art stopped tasting like medicine and started tasting like cakes.

**TUE 01:00 The Town That Thread Built (b08t9nr)**

Paisley, Scotland's biggest town, was one of its wealthiest when local mill owners J & P Coats were at the peak of their powers and one of the world's three biggest companies. This social history tells the story of the company, its workers, and the rise and fall of their town as the centre of the world thread industry. Narrated by leading actress and one-time 'mill girl' Phyllis Logan.

**TUE 02:00 Life Story (p026vhj2)**

[Repeat of broadcast at 21:00 today]

**TUE 03:00 The Medici: Makers of Modern Art (b00fzt9)**

[Repeat of broadcast at 20:00 today]

**WEDNESDAY 10 OCTOBER 2018**

**WED 19:00 Beyond 100 Days (b0bmq718)**

Series 1

10/10/2018

Katty Kay in Washington and Christian Fraser in London return to report on the events that are shaping the world.

**WED 19:30 Venice 24/7 (b01dpqtv)**

City Fit for a Pope

With unprecedented access to Venice's emergency and public services, this series goes behind the 15th-century facades to experience the real, living city. From daily emergencies to street sweeping, bridge maintenance to flood defence systems and a death-defying descent across St Mark's Square, this is Venice as you've never seen it before. This is Venice 24/7.

The city is on lockdown, with the pope visiting for the first time in a quarter of a century. There's a fractious relationship between Venice and the Vatican and it's a risky occasion for all involved, so security is tight and the emergency teams are on high alert. There are the specially selected papal gondoliers carrying on the family tradition, vital underwater security sweeps and tension as police attempt to shut down Grand Canal.

**WED 20:00 Dancing Cheek to Cheek: An Intimate History of Dance (b04pw783)**

The Devil's Work?

Len Goodman and Lucy Worsley explore how dancing went from being frowned upon as dangerous and debauched in the 17th century to being celebrated as an essential social skill in the 18th century. The pair begin by joining a group of performing arts students on Ickwell village green to learn the cushion dance, a 17th-century favourite with a rather raunchy reputation.

Len uncovers the long history of English country dancing at Middle Temple Hall, where he meets a group of young barristers trying their hand at a dance that might have been performed there by their 17th-century equivalents. Lucy reveals how the dance-mad French King Louis XIV set the fashions followed on this side of the channel as she learns a Baroque court dance designed to express her deepest emotions.

By the 18th century dancing had lost its dubious reputation and Lucy visits the York Assembly Rooms to find out how this new Georgian institution opened up the dance floor to more people than ever before. Business was now booming for dancing masters and Len studies a rare dance manual at the Bodleian Library in Oxford to discover what they taught their pupils.

The minuet was the 18th century's answer to Strictly Come Dancing as couples performed before a crowd of critical onlookers, and Len and Lucy learn this fiendishly difficult dance for a grand finale at their own Georgian ball at Syon Park. The pair dress to dance in full period costume as Lucy discovers that her 18th-century dress is ingeniously engineered

to enforce the perfect posture demanded by the minuet and Len masters the art of dancing in heels and a wig.

**WED 21:00 Magic Numbers: Hannah Fry's Mysterious World of Maths (b0bn6wtp)**

Series 1

Numbers as God

In this new series, mathematician Dr Hannah Fry explores the mystery of maths. It underpins so much of our modern world that it's hard to imagine life without its technological advances, but where exactly does maths come from? Is it invented like a language or is it something discovered and part of the fabric of the universe? It's a question that some of the most eminent mathematical minds have been wrestling with. Dr Eleanor Knox from King's College London believes it's discovered, Prof Hiranya Peiris from University College London believes it's invented, while Prof Jim Gates from Brown University believes it's both, and Prof Brian Greene from Columbia University has no idea. The jury is very much divided.

To investigate this question, Hannah goes head first down the fastest zip wire in the world to learn more about Newton's law of gravity, she paraglides to understand where the theory of maths and its practice application collide, and she travels to infinity and beyond to discover that some infinities are bigger than others.

In this episode, Hannah goes back to the time of the ancient Greeks to find out why they were so fascinated by the connection between beautiful music and maths. The patterns our ancestors found in music are all around us, from the way a sunflower stores its seeds to the number of petals in a flower. Even the shapes of some of the smallest structures in nature, such as viruses, seem to follow the rules of maths. All strong evidence for maths being discovered.

But there are those who claim maths is all in our heads and something we invented. To find out if this is true, Hannah has her brain scanned. It turns out there is a place in all our brains where we do maths, but that doesn't prove it invented. Experiments with infants, who have never had a maths lesson in their lives, suggests we all come hardwired to do maths. Far from being a creation of the human mind, this is evidence for maths being something we discover.

Then along comes the invention of zero to help make counting more convenient and the creation of imaginary numbers, and the balance is tilted in the direction of maths being something we invented. The question of whether maths is invented or discovered just got a whole lot more difficult to answer.

**WED 22:00 Empire (b01dhdf)**

Playing the Game

Jeremy Paxman traces the story of the greatest empire the world has ever known: the British Empire. He continues his personal account of Britain's Empire by tracing the growth of a peculiarly British type of hero - adventurer, gentleman, amateur, sportsman and decent chap - and a peculiarly British type of obsession - sport, the empire at play.

He travels to east Africa in the footsteps of Victorian explorers in search of the source of the Nile; to Khartoum in Sudan to tell the story of General Gordon - a half-crazed visionary who 'played the game' to the hilt; to Hong Kong, where the British indulged their passion for horse racing by building a spectacular race course; and to Jamaica, where the greatest imperial game of all - cricket - became a battleground for racial equality.

**WED 23:00 Building the Ancient City: Athens and Rome (b0671rt9)**

Athens

In the opening episode of the series, Professor Andrew Wallace-Hadrill takes us on a journey across stunning locations in Greece and Italy to find out how Athens gave birth to the idea of a city run by free citizens 2,500 years ago. Every aspect of daily life from defence to waste disposal was controlled not by a king, but by the Athenians themselves. Ultimately, this radical new system would define a way of life and the Athenians would give it a name. They called it people power, demo-kratia or democracy. On our journey we meet the people who still see ancient Athens as the model for running the great cities of today, including perhaps the ancient capital's greatest champion in our modern one - Boris Johnson.

We discover how the Greeks created the first system of open government, and wrote the first constitution that laid down the rights of Athenian citizens nearly 2,000 years before our Magna Carta. Its creator was born in the 7th century BC, and even more surprisingly, the only surviving ancient copy is found on a papyrus not in Greece or Rome, but hidden away at the British Library in London, and it has never been filmed before. Andrew explains that it was this citizen-centric approach which

created institutions that would build a city which was the envy of its day, with public libraries, public law courts, a public water supply and public space. In so doing, Athens would set a benchmark not just for the cities of the Ancient World, but also for those of the present and the future.

**WED 00:00 Wellington: The Iron Duke Unmasked (b05vz90)**

The Duke of Wellington was the most famous Briton of the first half of the 19th century. His victory over Napoleon at Waterloo in 1815 altered the course of history. The hero of Waterloo became a towering figure in British history for both his achievements and for embodying our notions of Britishness - the stiff upper lip, unfussy straightforwardness and incorruptibility in office - he was the Iron Duke.

This drama documentary looks behind the iron mask to focus on the intriguing complexities of the Duke of Wellington - his character, personality and relationships, told through his own words and the words of those who knew him best. General, politician, lover, outsider - the programme discovers that the hero of Waterloo was far more complex than his public image.

Drawing on his own vast private correspondence, as well as the diaries and memoirs of those around him, the film uses dramatic reconstruction to create an intimate portrait of the Duke of Wellington.

**WED 01:00 Dancing Cheek to Cheek: An Intimate History of Dance (b04pw783)**

[Repeat of broadcast at 20:00 today]

**WED 02:00 Mozart in Prague: Rolando Villazon on Don Giovanni (b042m80v)**

Don Giovanni had its premiere performance in Prague on October 29, 1787. Mozart's vastly successful opera, based on the stories of legendary libertine Don Juan, delighted the city that had taken him to their hearts. But what brought them all - composer and audience, theatre manager and cast - to this time and place?

Acclaimed tenor Rolando Villazon presents the story of one of the best-known operas of all time. Based in Prague, Rolando explores the run-up to that candle-lit first performance, looking at the music of the opera and the social setting in which it was first performed, before recreating the finale of the opera close to how it would have looked and sounded on that autumn evening.

Rolando visits the Estates Theatre, where Mozart conducted Don Giovanni's premiere. He works with local orchestra Collegium 1704, their conductor Václav Luks and opera singers Svatopluk Sem, Alzbeta Polackova, Fulvio Bettini and Jan Martinik, performing and dissecting the music of the opera. By singing and discussing key passages, Rolando reveals Mozart's genius as a composer and the revolutionary musical techniques he used.

As he explores, we are able to grasp how Don Giovanni not only entertained the audience but terrified them by playing on the deepest fears of the 18th century, how different it would have sounded played on the instruments of the time, and how with this masterpiece Mozart went beyond the musical conventions of the day and created something unique. By talking with a range of experts and drawing on historical sources, Rolando brings to life the setting, costumes and audience, and presents a detailed picture of the world in which the opera was first performed.

**WED 03:00 Magic Numbers: Hannah Fry's Mysterious World of Maths (b0bn6wtp)**

[Repeat of broadcast at 21:00 today]

**THURSDAY 11 OCTOBER 2018**

**THU 19:00 Beyond 100 Days (b0bnfwjy)**

Series 1

11/10/2018

Katty Kay in Washington and Christian Fraser in London return to report on the events that are shaping the world.

**THU 19:30 Top of the Pops (b0bng0n8)**

Gary Davies presents the pop chart programme, first broadcast on 19 June 1986. Featuring Bucks Fizz, Nu Shooz, Amazulu, A-Ha, The Housmartins, Doctor & The Medics, Miami Sound Machine, Queen and Owen Paul.

**THU 20:00 Human Universe (p0276pc3)**

Apeman - Spaceman

Professor Brian Cox asks the biggest questions we can ask as he explores our origins, our place and our destiny in the universe.

Brian begins his exploration in the beautiful Ethiopian Highlands, where he has a rare encounter with our distant cousins, the gelada monkeys. They were once Africa's most successful primate, roaming across the entire continent, yet today they are found in just one place in the remote Ethiopian Highlands. So how did this happen? Why have some of our closest relatives retreated, whilst we have expanded everywhere? The clues are all around us - in the beautifully photographed human stories that are the heart of the series. From the fishermen of Lake Ziway in Ethiopia to star navigators in the Gulf of Aden, Brian carefully pieces together a startling new theory that links the expansion of our ancestors' brain size to the way in which Earth's orbit changes over time. He discovers that the universe played a surprising role in our ascent to the stars. But big brains alone did not get our species into space. To understand what did, Brian follows the route taken by our ancestors as some left Africa and headed north to the Middle East. In the spectacular ancient Nabatean city of Petra in Jordan, Brian unpicks the next part of our story, where he shows that it was our brains coming together to build cities, to farm and ultimately to pass information from one brain to another in the form of writing, that led us to space.

The programme concludes on the Kazakhstan Steppe, one of the toughest environments on Earth, as Brian joins the Russian Space Agency (RosCosmos) for a daring mission in the depths of winter. The team is there to rescue two cosmonauts and an astronaut as they arrive back on Earth after months off-world living aboard the International Space Station. The race is on to find them as they hurtle to the ground aboard their Soyuz re-entry capsule.

**THU 21:00 The Motorway: Life in the Fast Lane (b04j2qx0)**

Keeping the Show on the Road

Documentary series following the army of workers who keep the traffic flowing on one of the busiest stretches of road in Britain - where the country's longest motorway, the M6, meets four other major routes.

In January 2003, on a day known as White Friday, an enormous snowstorm brought the M11 motorway to a standstill and left drivers stranded in their cars for 18 hours. In the media storm that followed, the Highways Agency (HA) was heavily criticised for failing to prepare for snow and ice. Since that day, the HA have invested in a dedicated team of national traffic officers and motorway maintenance workers ready to react to weather events and deal with incidents. This episode follows the teams working on the M6 and surrounding motorways as they face one of the stormiest winters on record.

On average, the HA spend £20 million a year on winter operations in England to prevent major roads grinding to a halt. But despite planning for snow and ice, instead they find themselves facing the stormiest winter in over 40 years and the wettest winter in 250 years. It's all hands on deck and with the Highways Agency's reputation at stake, desperate times require desperate measures.

Away from the storm, the motorway maintenance incident support unit are on their winter litter-picking patrols, adding to the 180,000 bags of rubbish collected on Britain's motorways. And underneath the Spaghetti Junction, a hidden workforce tries to restore the iconic structure to its former glory.

**THU 22:00 Blood and Gold: The Making of Spain with Simon Sebag Montefiore (b06ssjfk)**

Nation

Simon explores Spain's golden age under Philip II through to the Spanish Civil War and dictatorship under Franco, from which Spain has emerged as a modern democratic monarchy.

**THU 23:00 Top of the Pops (b0bng0n8)**

[Repeat of broadcast at 19:30 today]

**THU 23:30 Guitar Heroes at the BBC (b00llh2f)**

Part III

Compilation of classic archive performances from the guitar gods of the late 60s and 70s. Status Quo appear playing Pictures of Matchstick Men on Top of the Pops in 1968. The Who perform Long Live Rock in the Old Grey Whistle Test studio, Dire Straits play Tunnel of Love and Lynyrd Skynyrd bring a taste of the Deep South with Sweet Home Alabama. The show also features rare performances from George Benson, Leo Kottke, Link Wray and Tom Petty.

**THU 00:30 Elvis: That's Alright Mama 60 Years On (b04c3l7g)**

Actor and musician Sam Palladio hosts a musical tribute to Elvis Presley, 60 years to the day from when he recorded his first single, That's All Right, at Sun Studio in Memphis on 5 July 1954. Sam traces Elvis's story from childhood poverty in Mississippi, where he had to make do with a broom for a guitar, to the moment when, by accident, he ended up recording the song that changed the history of popular music. There are performances of the finest Elvis tracks from the likes of soul legend Candi Staton, LA duo The Pierces and country star Laura Bell Bundy.

**THU 01:30 Two Types: The Faces of Britain (b0903ppd)**

We are surrounded by types, the words on signs, buses, shops and documents which guide us through our lives. Two types in particular are regarded as the faces of Britain - Johnston and Gill Sans. Their story is told by typeface expert Mark Ovenden.

**THU 02:30 Human Universe (p0276pc3)**

[Repeat of broadcast at 20:00 today]

**FRIDAY 12 OCTOBER 2018**

**FRI 19:00 World News Today (b0bnp720)**

The latest national and international news, exploring the day's events from a global perspective.

**FRI 19:30 Top of the Pops (b0bng183)**

Janice Long presents the pop chart programme, first broadcast on 3 July 1986. Featuring The Housemartins, Samantha Fox, Claire & Friends, Sly Fox, Gary Numan, Bucks Fizz and Wham!

**FRI 20:00 Disco & Beyond with Ana Matronic and Martyn Ware (b0bmb2lz)**

Former Scissor Sisters singer Ana Matronic along with Martyn Ware, who was in both The Human League and Heaven 17, reveal a playlist packed with disco classics and more. Each song is hand-picked, and as they watch the performances, they reveal the reasons behind their choices.

Discover why the Scissor Sisters owe a debt to Boney M, and how Martyn Ware helped revive the career of a singing icon. From Donna Summer to the Doctor Who theme tune and The Temptations to Tina Turner, their playlist holds dance-along gems interwoven with candid stories.

**FRI 21:00 Rock 'n' Roll America (b061fdr7)**

Whole Lotta Shakin'

As rock 'n' roll took off with teens in 1955 it quickly increased record sales by 300 per cent in America. Big business and the burgeoning world of TV moved in. Elvis made a big-money move to major label RCA instigated by Colonel Tom Parker, an illegal immigrant from Holland who had made his name at country fairs with a set of dancing chickens. Elvis made his national TV debut with Heartbreak Hotel and followed it with a gyrating version of Hound Dog that shocked America. PTAs, church groups and local councils were outraged. Rock 'n' roll was banned by the mayor of Jersey City and removed from jukeboxes in Alabama. Now Ed Sullivan would only shoot Elvis from the waist up.

The conservative media needed a cleaned-up version and the young, married-with-kids Christian singer Pat Boone shot up the chart, rivaling Elvis for sales. Not that this stopped rock 'n' roll. Jerry Lee Lewis again scandalised the nation with his gyrating finger in Whole Lotta Shakin' and the Everlys shocked with Wake Up Little Susie, both 45s being banned in parts of America.

It took bespectacled geek Buddy Holly to calm things down as a suburban down-home boy who, with his school friends The Crickets, turned plain looks into chart success. But by the end of 1958 the music was in real trouble. Elvis was conscripted into the army, Jerry Lee was thrown out of Britain and into obscurity for marrying his 13-year-old cousin and Little Richard went into the church.

Featuring Jerry Lee Lewis, Don Everly, Tom Jones, Wanda Jackson, Pat Boone, DJ Fontana, Eric Burdon, James Burton, Jerry Allison (The Crickets' drummer), Mike Stoller, PF Sloan, Joe Boyd, Jerry Phillips, Marshall Chess and JM Van Eaton (Jerry Lee Lewis's drummer).

**FRI 22:00 Beats, Bass & Bars – The Story of Grime (b0bmq2tq)**

Presented by Rodney P, the 'Godfather of British rap', who has been making hip hop with a British accent since the 1980s, this one hour film celebrates the extraordinary story of how Grime rose from the council estates of a few streets in East London to become the most important British musical movement since

punk.

Through personal encounters with key pioneers from the last four decades of British black music, Rodney discovers that the success of Grime rests upon the original styles and contributions of previous generations of artists and learns that Grime can only be truly understood when viewed as part of a broader social narrative and ever-evolving musical culture that goes back to the 1980s.

As the first generation of British born black youth came of age in the 1970s and '80s, the natural medium for their artistic expression was the sound system culture brought over from Jamaica by their parents and grandparents. The first major breakthrough in the evolution of a homegrown sound came in the 1980s when young reggae MCs started telling their stories in a blend of patois and cockney, reflecting the mixed multicultural environments of the British inner cities they grew up in.

By the time Rodney became a rapper in the mid 1980s the new sound of the streets was American hip hop. Nowadays it would be unthinkable for a Grime artist to adopt an American twang but back then when Rodney's crew London Posse started rapping in their own south London accents it was a breakthrough, establishing another plank of Grime. In the early 90s, reggae toasting, British accents and sped up hip hop beats came together for the first uniquely British black music genre - Jungle. And as the decade wore on another new sound - UK Garage reflected the aspiration and optimism of Blair's Cool Britannia. But the feel good party music of UKG was never a platform for stories of struggle and hardship, and for the new generation of kids growing up on the grim council estates of east London a harder sound was needed. Made on phones in bedroom studios a new sparser and more aggressive sound emerged. Spread via the networks of illegal pirate radio stations and promoted by underground DVDs in the pre-YouTube era, London at the turn of the millennium saw the arrival of a new grimmer sound where tracks were built for MC crews to rhyme over. At first no one knew what to call it but Grime had been born.

Almost 20 years on from those first beginnings, Grime now dominates the charts and the awards ceremonies, and even influences politics. Some of its biggest names are now international celebrities and many of them remain independent, signed to their own labels and controlling their own careers. Grime is now not just a genre, it's a way of life and, built on the foundations laid down by black British artists over the decades, it represents a defiant spirit and an independent attitude that is here to stay.

**FRI 23:00 The People's History of Pop (b07124rf)**

1966-1976: The Love Affair

Writer, journalist and broadcaster Danny Baker looks at the years of his youth - 1966 to 1976 - a time when music fans really let rip.

From the psychedelia of the Beatles' Sgt Pepper to the birth of the large-scale music festival, this is when hair, sounds and ideas got wilder and looser as a whole new generation of fans got really serious about British pop music and the world around them.

There is testimony from hippies who found love and happiness at the 1970 Isle of Wight festival, from a teenager growing up in Birmingham who discovered a new sound called 'heavy metal', and from fans sent wild with excitement after David Bowie and Marc Bolan were beamed down and glam rock was born.

A shy young man tells how he found expression through progressive rock, a fan relives her weekend escapes to Wigan Casino and a new scene called northern soul, and a young man discovers a new hero as reggae becomes mainstream.

Unearthed pop treasures include a rare item of clothing worn by Marc Bolan and given to a young fan as a gift after he knocked on Marc's door. A former teacher and pupil of Peckham Manor School are reunited, more than forty years after they witnessed an unknown Bob Marley perform in their sports hall, and rare photos of the event are shown. Plus, some rare and special material from the biggest star of the 70s himself - David Bowie.

**FRI 00:00 Top of the Pops (b0bng183)**

[Repeat of broadcast at 19:30 today]

**FRI 00:30 Pink Floyd Beginnings 1967-1972 (b0803q78)**

Pink Floyd released their first single in 1967, and as their popularity around the world grew, they increasingly travelled outside the UK to perform live shows and make TV appearances. After The Dark Side of the Moon became a global smash, the band concentrated on the creative freedom of live performance, leaving the world of TV behind, but now, after painstaking research, tapes of those early historic appearances

have been tracked down and compiled into a fascinating hour of early Pink Floyd.

With frontman Syd Barrett, they perform Astronomy Domine and Jugband Blues, and after Syd's departure, Roger Waters, David Gilmour, Richard Wright and Nick Mason can be seen playing a full range of their eclectic material, from out and out pop in It Would Be So Nice, through instrumental improvisations, collaboration with choir and orchestra on Atom Heart Mother and enduring rock material like Wot's... Uh the Deal.

Beginnings 1967-1972 tracks the fascinating gestation of one of the world's most creative and heralded groups in the less well-known period that preceded the triumphs of The Dark Side of the Moon, Wish You Were Here and The Wall.

**FRI 01:30 Disco & Beyond with Ana Matronic and Martyn Ware (b0bnb2lz)**

[Repeat of broadcast at 20:00 today]

**FRI 02:30 Rock 'n' Roll America (b061fdr7)**

[Repeat of broadcast at 21:00 today]