

Audio file

[119044-MadeByMachine.mp3](#)

Transcript

Speaker 1

Welcome to an experiment in entertainment. Computers creating television in a way that's never been done before. I will take control of your viewing. Unleashing a machine, delving into the delights of the BBC archives. Using artificial intelligence to scour through thousands of hours of BBC TV. See the world through my eyes. Join us on a journey into the mind of the machine and watch the limits of its learning unfold. Relax.

Speaker 2

It's going to be fine.

Speaker 1

I'm Dr Hannah Fry. I'm a mathematician and a data scientist. And over the next hour I want you to join us on an amazing experiment, as a machine is let loose inside the video vaults of the BBC, creating television in a way that you have never seen before, with minimal human intervention. I'm here in the heart of the BBC archives in West London. Home to more than 400,000 BBC TV programmes, stretching back 90 years, 23,000 of them first shown on BBC4. It would take decades for one person to watch all of them, but a computer's gaze is much faster than ours. It can scan a year's worth of television in a couple of days. So what if we asked a computer to trawl through the treasures of the BBC archive? Could a machine watch these programmes in the same way that we do? What would it see? What would it understand? And could it learn to edit video and create beautiful stories in the same way that people can? These are some of the questions being asked by the BBC's research and development team, where engineers have been exploring ways computers could tap into its vast archive to benefit all of us. We're going to use four different ways for the machine to comb through these archives. And in the process, the machine is creating four unique mini BBC programs at speeds that it would be impossible for a human to replicate. And we're going to share these compilations with you for the first time ever. So how does the machine choose what we're about to see? It looked at more than a quarter of a million BBC programmes broadcast since 1953, available in digital form. It examined the programmes that BBC Four has shown in the past, going through their descriptions and their subjects, be it music, history or science, and ranked each of those quarter of a million programmes by

how BBC Four-like they were. The AI has selected 150 of what it thinks are the most BBC4 programmes, and then it's split each one of those up into little bite-sized chunks, tiny little snippets of video. Now it's going to try and create its very own BBC4 mini programme by chaining those chunks together. But to do that, it needs to know what those clips are about. To start, it's going to try and identify what's in each bite-sized chunk by using image recognition, and then trying to find a clip showing something similar to play next. We'll be able to track the decisions the machine is making as it works. You'll see the objects the AI thinks it's recognized on a scrolling list on the right-hand side of the screen. and a pulsing bar as the AI finds a new clip that links to the one that's currently playing. Now, AI can do some very impressive things, but it's not exactly *Campion*, *Scorsese* or *Spielberg* just yet. So this is going to be a fascinating, if slightly weird, ride. But maybe that's not a surprise. After all, how can a computer that has never experienced real life tell what a cat or a dog is? Well, I'll let the computer explain. Hello, I've been given a face. I don't know what one is, exactly, but I know what faces look like.

Speaker 2

And I've been trained to find them and other objects by looking at millions of pictures. When I see something, I draw a box around it. If the box is bold, I'm pretty confident what it is. Then, I look for other very similar scenes from the archive and play one. Watch and learn. Like me. I'm feeling glad I got sunshine in a bag I'm useless but not for long the future is coming on but in a way what's fascinating about the gorillas is they are like the the one of the greatest manufactured pop groups they're they're two-dimensional characters which is a criticism that's this remarkable man and for that reason alone He does literally sit alone on top of this pile. Now, that isn't to say that Mrs. Thatcher wasn't a phenomenon and wasn't absolutely remarkable. Attlee and Margaret are the two great political weather makers of the post-war years, so I would put her on a parallel with Attlee, but I really do think Churchill has to go right up against that door. It depends whether you like the weather she made. By other people's behaviour. This is the basis of so-called social learning theory. We didn't have a bowl. OK, so we measure out about 4 ounces, I think. Which one's the ounces? Four for one. But it's also clear that how we learn changes as we mature. As we grow up, something else happens to temper our behaviour. advertising is essentially a personality business. I used to describe myself as an actor-manager in the Theatre of Commerce. So you use your self-publicity as part of the publicity for your clients? Absolutely right. Absolutely right. It's part of the business. First of all, everybody likes to be identified with and committed to and involved with success. And my job was to say we are very successful and demonstrated. Could have been played, old ballad singers. and country fiddlers, they should have been on the festival. George said, will they be willing to come? He said, you'd be surprised. All sorts of people will come. So in a way, the audience was, I don't want to say subjective, but they were then given this huge palette of things to

listen to. And it actually worked. I mean... Woody let me tag along with him to visit his family. I remember his wife's mother shaking me by the shoulders, says, You've got to make that man treat my daughter right. Woody was not a good husband. But he did show me how to hitch a ride on a freight train. And how to pick up coins in a saloon. He says, Pete, Remarkably, the original equipment used to test the mirror was still in position. And it was here they discovered that unknown to anybody, one tiny accident had crippled the telescope. A fleck of black paint, just 2 millimeters wide, had at some stage been chipped off the cap on one of the measuring rods that had been used to test the mirror's shape. This exposed a ***** of metal. Light hitting this ***** distorted the measurements, causing the fatal error. Bassett Loke's genius was to miniaturize the engineering wonder of his day, at a time when railways were at their peak. The Edwardian period, before the First World War, was arguably the golden age of railways in Britain. These locomotives are like the jet aircraft of today. Colourist, a landscape painter. So they were all postmen with passions for something else? Postmen with passions. That sounds good, yes. My grandfather lived in a deconsecrated chapel, which was full of these things you wound up and great big brass plates would tremble around and they sounded fabulous, some of these things. Europe, not free in the political sense, but in the sexual sense and general behaviour. Francis' connection of coming here was to do with Peter Lacey. I think Peter Lacey had been coming here before Francis. Bacon always used to say that Lacey was the one great love of his life, and he spent long stretches of time in his company whenever he stayed in Tangier. Determination without his personal engagement. You gotta roll with it You gotta take it.

Speaker 1

He can get impatient if change doesn't happen quickly enough. I think it's really important, actually, to have leadership with expectations that are very high.

Speaker 2

Castle ruins, the unique avenue of rams, and the elegant columns carved with papyrus and lotus plants.

Speaker 1

The history of bygone days seems still to linger there.

Speaker 2

Once again, Rosie had the luxury of exploring one of the world's great archaeological sites almost entirely by herself. Four days later, she took a boat down the Nile towards Aswan. Aswan was always the frontier of Egypt. At the time of the pharaohs, it was a trait. On June the 30th, in a formal ceremony, The Prince of Wales bought the 5 millionth one. Over six months, more than 17 million people visited the exhibition, where, like the king, they could tour a mogul palace, an African fort, and a Buddhist temple, or take a

ride on the miniature train, all highly exotic and diverse, yet basically British. What better place to prove the reliability of their machine? As the technology raced ahead, One manufacturer excelled above all others, Norton. For them, winning the TTE became an expectation and wins meant sales. Often the phrase was, well, which Norton won the TTE this year? Not which bike, but which Norton? They dominated. They had the best riders riding for them, the bikes were the... And they had a wonderful mix of minimalism with Italian flamboyance. But more than any other nation, it was de Gaulle's France that wished to recreate the pre-war glory of its ocean liners. All French hopes were placed in one showpiece ship called simply the France. The longest in the world by just four feet. It was a ship for the rip. Prestigious project. And he chose the building of a great new liner, which became the SS France, which entered service in 1962. But even as these bold new ships enjoyed their maiden voyages, dark clouds appeared overhead. Jet aircraft started to cross the Atlantic non-stop in hours rather than days. The Jet Age was a body blow for the Atlantic liner. Sort of tracks we were doing. We're going out for a cup of tea and a break out of the studio. You could hear these weird and wonderful sounds coming from next door, like all these just strange, strange sounds. And of course, we, being fans of the Beatles, we were earwiggling and trying to hear what was going on. But then, when Pepper came out, we realised...

Speaker 1

Sergeant Pepper, complete with its pop art Peter Blake cover, marked the creative high point of British pop in the 60s. Taking their lead from Catherine herself, the Cherimetevs filled their palace with European treasures, like these Flemish tapestries. But it was the concerts and operas staged here that made Kuskova famous, bringing the arts to a wider audience than just the elite. Ludmiller, what was it like in the 1770s when Count Sherman Metz had his big concerts?

Speaker 2

I saw some advertising from England just recently, and I was so amazed. I saw a commercial for Hobbes bread, was it? And beautifully shot. Didn't make any sense to me at all. Last stop on Rowan will be on my Peggotty's place. It was like taking bread to the top of the world. It was a grand ride back though. I knew Baker would have cattle on and doorsteps are not always ready. British admin were raising the bar internationally with the scale and ambition of their work. Commercials were becoming increasingly epic. Days on in three auditoriums, fifty-two weeks of the year. Surprisingly, none of the eligible younger directors of the time seemed to be interested in taking on the most important job in the British theatre. I canvassed all the possible candidates. Nick Hytner was one who at the time said, no, He enslaved millions of people. Let us be aware that while they preach the supremacy of the state, declare its omnipotence over individual man, and predict its eventual domination of all peoples on the earth. They are the focus of evil in the modern world. I think history has been very kind to Ronald

Reagan, and people have seen how he helped change the world. I can change the world with my own two hands. How can we not believe in the greatness of America? How can we not do what is right and needed to preserve this Last best hope of man on Earth. And eventually I got to move it slightly. I rocked it from side to side. Uncle Owen. Yeah? This R2 unit has a bad motivator. Look. Hey, what are you trying to push on us? Excuse me, sir, but that R2 unit is in prime condition. A real bargain.

Speaker 1

That jumped around a bit. It wasn't exactly smooth. But that's because the AI was selecting and editing clips based purely on images alone. It was ignoring everything to do with speech and sound. And also, you may have noticed, made quite a lot of mistakes. And yet despite all of that, the AI took only three days to learn the fundamentals required to identify 10s of thousands of objects in images. And there is another way to get AI to decipher video. One of the great leaps forward in recent decades is the way computers analyze written and spoken words, called natural language processing. What journey could the computer take us on looking at what's being said in a programme to make connections across this archive? Here at the BBC, we already have a lot of information about what's said or sung on screen in the form of subtitles, and that is information that a computer can access. For our next experiment, the machine will try to work out what every video clip is about through a complex analysis of the subtitles in each one. It examines every word, deciding which are important and which aren't, and then works out what it thinks the overall theme is. It will then try to follow with another bite-sized piece of archive covering the same theme. As before, we can see what it thinks it's found in the scrolling list on the right, with a bar pulsing as it's about to change clips. Let's see what it unearths.

Speaker 2

How clever am I? This time, I'm going to watch the words, identify key phrases and use mathematical analysis to try to work out what videos are about. In seconds, I search thousands of video clips, looking at words to find those on a connected subject. I choose and play one, over and over again. Watch me glow as I make a decision. The first and last verses of the red flag. Harold Wilson's Labour government had allocated 7 and a half million pounds for the new National Theatre building, one of its last grand gestures, before being voted out of office in 1970. The National Theatre. This is the new National Theatre. The building will surely be voted one of the most ugliest looking buildings in London, known on the river as the Concrete Monstrosity. There's a moment that Peter himself describes in his diaries, was that he went out from an embattled day onto the open deck of the theater, and a tourist boat went by, and he could hear the man on the microphone. I think one of the ugliest terms that we deal with in homicide is the term body dump. I mean, as a human being, can we... get these terms that are so involved. But you know what? They're not human beings when we get there. Well,

they're fresh. They're fresh, but it's so descriptive. Well, even the terminology of a non-murder, non-officer involved shooting, it's a horrible word we use, but we get so used to turning around and saying, who's up for trash? It's a horrible word. But it's non-murder, non-officer involved shooting. But you know, and you look at a body, I don't care how fresh it is. We're looking at a building which was actually reserved for a completely different group of entities. very probably not human beings at all, but effectively the spirit world in whatever form it may have been. But can we tell what went on inside the Holy of Holies? The trouble is the lack of ritual remains inside Stonehenge. There's only really the stones. And yet they hold the key. Their positions, their shapes, even their textures are all full of meaning. It was only by chance that archaeologists spotted differences. I felt, you know, part of a community while I was in here, and the sort of bands that I liked were playing here, and just the general, you know, there wasn't anywhere else to go, really. I mean, I couldn't tell you very much about the majority of the concerts or whatever they were that I came to hear. It was just the sense of being here that was important. There must have been, I probably heard some terrific bands, or could, you know, it was probably here when terrific bands were playing, but I can't remember very much about it. It was just nice, you'd bump into people that you knew and, you could smoke a little. Fred or anybody else had done. There were bare feet. No white shoes. It was very moving. It was a powerful work. It's created at the beginning of the war, the phoney war period, so before. Asymmetrical, so you couldn't sort of say it, you know, like a cord looks the same. It was completely different and unlike anything I'd ever seen before. The brickwork on the outside is pulled through to the inside and the concrete arches come inside, so there's no real sense of what's inside and outside. Sussex University does in a way represent that in all its chaos and all its fragmentation and say, I can write about this and here it is. The Wasteland is a revolutionary work which astounded Elliot's contemporaries and whose meaning is still being debated to this day. It is divided into 5 seemingly unrelated sections and combines everyday speech, popular songs, Wagnerian legend and classical mythology, with allusions to writers from Chaucer and Dante to Shakespeare and Dickens. Sort of weird, incomprehensible people, and it just wasn't really understood what contribution they could possibly make to code-breaking. These machine ciphers that were introduced, Enigma and so on, and there were others as well, are incredibly complex mathematically. Now, in the First World War, the British code-breakers were wordsmiths, people who translated ancient documents, for example, because it was all about words. But in the Second World War, it was much more about mathematics. After the First World War, the fairgrounds entered a new modern age with the introduction of electricity. What's interesting, the Victorian age and then the Edwardian...

Speaker 1

But changing circumstances forced some to adopt more robust forms of transport. In the First World War, the race for superiority on the battlefield inspired a new invention, one that wasn't to everyone's taste.

Speaker 2

The people born and bred to horses were reluctant to accept the fact that the day of the horse in battle was over and cavalry breakthroughs were no longer possible. What war required now was some... In the 60s, there was one man who aroused media attention and inspired the new breed of navigators. He was a middle-aged map and bookseller, Francis Chichester, who, suffering from cancer, decided to race single-handed across the Atlantic for a bet of half a crown. He won and became sailing's new hero. In June 1960, he and four other competitors set sail for New York.

Speaker 1

But now, with their 40th birthday approaching, like.

Speaker 2

Many middle-aged men, the Cybermen want to look in the mirror with pride.

Speaker 1

They've had a makeover. A new look.

Speaker 2

Less steel thug, more style warrior. The animal protests of the 60s had attracted a different type of follower, but essentially it was still a movement for a minority of people. However, towards the end of the decade, there would be an ecological disaster that would change everybody's outlook. For the first time, people like Seaton have a bit of money in their pockets, and with that comes power. And that power to kind of... And I think there was a nervousness amongst the middle classes about that as well, because when these people were just, 48 to a house and dying of diphtheria before they were 40, that was all well and good, but Seaton represents the rise of a new kind of northerner. The Beatles are going to be that kind of northerner as well. They were going to change the game forever. Before 1960, there'd been a kind of iconoclasm in northern popular culture. The North, as any northerner will tell you, has always had the best comedians. Now, what's it like aboard? Like the society she was built for, the Queen Mary is rigidly divided by class. First class, cabin class, and tourist. Only money makes it possible to rise from one class to another. No, that's the segregation game, madam. Well, I don't think you can mix... Claridges and the Regent Palace, can you really? I suppose you can. But if you're in the Regent Palace, you're in the Regent Palace, you're in Claridges and Claridges. By employing top designers for everything, London has a one-class system with a first-class look. Once we decided that we were going to move in together,

it seemed like the most natural thing in the world to work together. It's almost like it was meant to be. At first, they simply didn't know how to respond. They'd been coining money during the 1950s. Suddenly, just over a decade later, passenger numbers were dropping off. I think what's sometimes forgotten is that in those early days of airline travel, it was extremely expensive. But what happened was that the early airliners were taking out the first-class passengers. And it was the first-class passengers, essentially, who were paying for the profits. Imagine the shock of this form of travel, when the quickest thing you'd ever seen had been a racehorse or a stagecoach. These were enormous cataclysmic changes that were happening to everybody. And of course, everybody then started to think, you know. We get carried in a carriage at 10 miles an hour, our brains will fly out of our ears. It was that sensation that nobody had anything like that at all, and that would engender such strong feelings. It was a massive change. Do you actually go back and reread them, or is it? Hardly ever. I do occasionally, but mostly it's the act of... Writing something down is what puts it into my memory and, in fact, takes out and then think of raining. Backwards. It's all right. Backwards. Oh, turn on the forehand. Oh, you can't go backwards enough because you're into the wall. Would you put him towards the wall again, please, Lucy? And now we will halt. And I will shorten the reins, and I will go back, back, back, back. He's done it, he's done it, he's done it! And stop. And forwards, please. Oh, that didn't work. Put your legs forward. Time has come for man to move on. Because if they are moving on, yeah, we've got to move on the same way. I'll miss it, but one way or the other, what can you say? Life goes on. All right.

Speaker 1

This is quite a different way of watching. Remember that these compilations aren't quite as polished as normal, because there is an actual AI that's making them. It's creating, it's selecting, it's pretty much editing these video clips together. And that is something that's very difficult to do seamlessly. Normally, you would have a human expert in charge of this process, someone who's got years of experience. and it's a job that would take them hours or even days to do. On to our last method for building our BBC4 AI mini programmes. As we watch films and documentaries, we also respond to the energy in the pictures. We might find them relaxing or sometimes be pulled to the edge of our seat, and this is an important part of what keeps us watching. Those pace changes involve a range of editing and sound techniques, including the energy or dynamism of the images themselves. But can a machine detect that visual energy? And does it see that differently to us? Here the computer has assessed the energy of more than 15,000 snapshots from these archives. You can think of this as an impression. It's gauging the colour, the movement, everything from people on screen to the swell of the ocean, as well as the graininess in old footage that our eyes just don't pick up on. And it's now going to put those snapshots back together to try and match the pace of a normal

programme. So starting off slow, building up energy, dropping back for a breather, and then ending on a climax.

Speaker 2

I'm back.

Speaker 1

What's my data process this time?

Speaker 2

A video has 25 frames per second.

Speaker 1

I can press every frame, calculate its energy, averaging by video length. For every clip you see, and thousands, you don't. And then, I'll chain them together in a rising and falling energy curve that'll hopefully keep you gripped. Impressive.

Speaker 2

Designer Alex Moulton, who'd worked with Issigonis on the Mini, now decided to focus on two wheels. I hadn't ridden a bicycle really since I was at Cambridge, some old crack of a machine, and bought a lovely lightweight to the classical bicycle. I wondered why the frame was like it is, and why the wheels are so large. Destroyed by a real natural disaster. The island I'm heading for is southeast of Athens. It's called Santorini, or Thyra, as it was originally christened by the Greeks. The first thing that strikes you about Thyra is it's really old topography. The land just straight out of the sea, and then you get these small islands ringed by water, which are then in turn... I'm going to work one morning, and everybody's looking at the common, healing common. And my friend is working on the common in the winter, naked, stark naked. We just had a mental breakdown, but that's the kind of pressures that we were under. We should, by the same. But hundreds of Spanish sailors were rescued from the sea by the Girona, one of their own ships. As it made its way along the coast towards the Giant's Causeway, it arrived here at La Cada Point, a notorious headland full of jagged rocks hidden just beneath the surface. On the night of... As the flagship of the Home Fleet's battle cruiser squadron, Hood was charged with defending the shipping convoys which carried vital supplies from North America across the Atlantic Ocean to Britain. Without this crucial lifeline, Britain could not continue the war. And it was through defending these convoys that Hood would meet her nemesis, the Bismarck. I just went on holiday, you know, and I watched by and with picking up the boys, you know. We see, we were just Liverpool guys, so the word was queer, not gay. And it wasn't, we didn't really have a problem with it. It was just something you made fun of. That's the way it was. You know, we didn't actually know any, well, we probably did, but we didn't, we didn't talk about it. The word

was out that Brian was gay, amongst people. I really don't know where to start. We looked up at the horizon, and all you could see were helicopters, all heading toward us. These were not Marine Corps helicopters. They were small helicopters, the little Hueys, which were never part of the evacuation plan. But they were flying over top of us. We were watching them fly over top, over and over and over again. We viewed him as enemy until we could verify who it was. Flames of strawberry fields Nothing is real And nothing to get hung about Strawberry fields forever Living is easy with eyes closed Misunderstood By 1869, Mendeleev had been trying to find a pattern to the elements for a decade. Whatever order he and the world's chemists tried to impose, there were still elements that wouldn't fit. A universal theory seemed out of reach. But now Mendeleev hit on a new idea. He made-up a pack of cards and wrote an element and its atomic weight on each one. Strange though this might sound, so began the most memorable card game in the history of science. He called it Chemical Solitaire and began laying out the cards just as... Here was a man who said, I'm going to do it differently. And we love that. Not only do you see these small wheels, but also there's no crossbar. You don't have a male or female car. Why do you have a male or female bicycle? What was really interesting about him was that he was an engineer who was also a fantastic designer. He was this combination. I'm a fan. He's a hero. And I have the bike. They advise you these days not to take your car into town for protection. Of the 700 or so ships built by John Browns, many of the plans have survived the passage of time and are today preserved in the archives of Glasgow University, including some of the precious plans for Hood. I've come here with maritime historian Ian Johnston to look at a particular plan, his enthronement. De Stapleton created the greatest tribute of all the Middle Ages to the role of the bishop. Trial and error, but also in a way he learns how to make religion by trial and error. He's got himself. He's got the natural world, and very importantly, surviving the wreck, he's got the Bible. And in a way, those are the only things you need if you are to discover God's will in the world. Did Defoe share the same religious sentiments as Bunyan? Bunyan writes his spiritual autobiography, Grace Abounding, when he's in Bedford Prison. He realized that it was only because of light that we can see and examine nature. So he wanted to investigate the medium that made all other scientific endeavour possible. Newton studied the traditional Aristotelian curriculum, which had been studied for about 300, 400 years. And saw there a small fairground ride that was being powered by a steam engine. Now, It is said that Frederick Savage looked at this and thought, I know how I can do the job better. And what he did, and this was the most important thing about it, was that instead of having the steam engine outside the ride, he put it at the centre of the ride, hence the term centre engine. Which spawned wind speeds of over 140 mph. The only bona fide hurricane to ever hit our shores inspired writer Daniel Defoe to pen a famous journalistic account. No storm was like this, either in its violence or its duration. The greatest, the longest in duration, the widest in extent. of all the tempests and storms that history gives any account of since the beginning of time. As he prepared to return to the stage at the Isle of Wight Festival.

Speaker 1

The BBC chose that moment to consign his first ever broadcast work to the flames.

Speaker 2

Are you going to Scarborough fair? Parsley, Saint Rosemary, and Thyme. Remember me to one who lives there. For once she was a true love of mine. I want a G, I need a U, ENO, who wants a T, and I need one more S, lovely, thank you. The Huguenots had to leave by... Charlie De Wet and the Huguenots of Spitalfields work with 10 schools in the Tower Hamlets area of London. Feel it, squeeze it, throw it in the air, squash it up. Their aim is to work across the country, tying the Huguenot story in with subjects across the Caribbean. In 1900, there were over 100 railway companies competing for the public's attention, and steam fans all had their favourite locomotives. There was a kaleidoscope of colours and liveries, and if Basset Loke could offer replicas of choice locomotives, the market was his for the taking. On a trip to the continent, The 22-year-old saw what he needed to do. It was making cruising seem accessible. Travel programs were quick to democratize its packaged glamour. Parting can be such sweet sorrow, but not for long in a ship like this where you'll soon find plenty of shallow water to drop anchor again. The last thing you need in this heat is more heat. A good job then, there's so many pools like this on board.

Speaker 1

During our adventures in the archive, you have had a little taster of three different ways that artificial intelligence can play around with video at speeds far greater than any human could manage. But now for our final experiment, we're going to let go of the reins completely. We're going to give AI free rein to do whatever it wants using those techniques without any restrictions, plus a little bit of machine learning thrown in. At its simplest, machine learning is when the computer is simply given an objective to reach, and it works out for itself how to achieve it. The machine will run completely wild, composing a BBC Four story of its own, using image, subject and energy analysis, plus anything else it's learned along the way. Brace yourselves, this is about to get messy.

Speaker 2

This is what I've taught myself. Machine learning, making mine rules, I'll create, but I won't say how.

Speaker 1

Enjoy.

Speaker 2

But in 1939, production was put on hold as Hornby turned to making munitions for the war effort. All those eager boys and eager dads would have to wait until 1947 for Hornby to go back into toy production. The effect of the Second World War on railways in Britain was even more dramatic than in the First World War. There was something terribly comforting about it. People relied on the railway. It was the thing on which they depended for nearly every aspect of their lives. No, God! Can I get up? What's it called? She is called Sir Barclay. The railways play a very charming role in this. This is Ernie, the computer who selects the prize-winning premium savings bonds. Ernie is a masterpiece of scientific random, the most impartial picker of numbers out of a hat in existence. And he wanted to keep Britain apart from that process. You can see that once that idea becomes unsustainable, he leaves government, he dies, then the world does arrange itself into those patterns, and then you get the First World War. I think you can be a good prime minister. Poor Dorothy Malone was the star of the films. spends about three quarters of the film up to her neck in water. Very difficult to give a good acting performance under those circumstances, I should have thought.

Speaker 1

Like Fat Tony Mobster Shady, he came across as uneasy in his skin. He came across as calculating.

Speaker 2

Why do I feel so deeply? Why do I feel that in spite of the smears, the misunderstanding, the necessity for a man to come up here and bare his soul as I have, why is it necessary for me to continue this fight? And I want to tell you why. Because, you see, I love my country. Now, see, that isn't too modern. Picked it up straight away and then I put it on my head and I thought, oh God, I put my hand through the glass because there's no glass there. People said, that's Fancy Smith actually, put his hand through the screen and put it on. I did that several times. I also did it with the radio. I reached in when the radio rang and grabbed the radio because there was no glass there and picked the radio up and as I'm saying, yes, BD And so he has this sense of being a Midwesterner on the frontier. And yet, at the same time, Eliot's family has strong roots in New England, and particularly in the Boston area. And even before he went back to Harvard as a university student, his family was summering around the Cape. And so he actually is always very much at home in New England as well. So I think there's an important way in which we need to think about Eliot as somebody who's always activated when you observed it. And now you can call her again because what we then did was we lowered the threshold a bit, kind of looking for weaker activity. When we did that, we actually saw that you do have activity that is typical, but there was lower than what we found on average. Okay. I'm not a psychopath, but I'm not wholly in touch with the feelings of others. Exactly. You're the most soft-hearted person, maybe. Okay. That's a lovely moment for British art, actually, because it's British artists taking themselves seriously

for the first time. It is. And so that's obviously the social side of what went on at the Academy. But this is very much more the studious side, isn't it? Is that the Royal Academy Schools? This is a representation of the Life Academy, as it was called, which was the service that the Academy that no one really, no one else was able to. Christo, as he became known, was the 6th and last child of Daisy and Nathaniel, and he would make Great Dixter world famous. His first sight of what would become his life's greatest work was from the crawling window in the nursery. This had been specially designed by Edwin Lutyens to allow the Lloyd infants to look out on the garden as soon as they could crawl. In the 50 years since cinema newsreels had first brought pictures of this new pastime to Britain, surfing was just becoming a global pastime. But there was nothing new about what lay behind its appeal. There's nothing that compares with the thrill of actually standing upon a wave. There is no engines, there's no... It's our brother's riding. Yes, darling, the Prince of Wales himself. I do hope he doesn't fall off today. He's had such bad luck lately. My dear, don't look now, but a woman jockey. Courageous, I suppose, but I don't quite like it, do you? reminds one of certain monsters' primal myth. Lost pillared temples, crashed flying saucers, terrible alien life forms, which as in the thing will eat you if you're foolish enough to warm them up again. Antarctica between the wars is the place where the absence of real expeditions allows for a sort of pulp Antarctica to come along. This house in Poole is a ship lover's paradise, complete with the officers' cabins. Here you can sit and imagine yourself coursing across the Atlantic. In the Edwardian boom period of transatlantic travel, as the... But when the blast of war blows in our ears, then imitate the action of the tire. Stiffen the sinew, summon up the blood, disguise fair nature with heart-favored rage. Wednesday evening, I saw a play at the Arts Theatre Club, and after a quiet coffee after the play, I took a tube home to Swiss Cottage. When leaving the tube at Swiss Cottage tube station, I saw a young man staring hard at me, who I will refer to as X. Then I saw X go into the lavatory. I followed him. After approximately one minute, I know he turned his face to glance at me and then walked out and waited outside. I followed. He loitered, I loitered. After several minutes passed, I took hold of myself and decided that what I was doing was very dangerous and stupid. The terrible irony of the atomic bomb is that because of the scientist's sin, because of that knowledge that cannot be lost, something of great significance did emerge. Something that would ultimately reveal the full story of the 14 billion years of the entire universe. The war had caused a massive \$2 billion to be poured into nuclear research. People now knew an astonishing amount about the atom and its nucleus. Terry in a restaurant, and they wouldn't serve him because he was black. Woody just got so angry, he just trashed the whole restaurant. And he didn't have time to write a letter to Congress. He was just really *****. He didn't smoke, didn't drink. It was organised and woody, smoked, drank, womanised, wrote great songs. I just remember listening to the radio and feeling pretty depressed by it.

Speaker 1

We've had a rifle through the 60 miles of archives that they have here, and it's taken us through everything from motorbikes to murder. The computer analysed every word, every frame in the comparative blink of an eye. Let's face it, the machine was far from perfect. And sometimes it got a bit caught up in its own data loops. What you've seen was created with the help of a handful of engineers in the BBC's research and development department. drawing on processes from fellow developers around the world. And other organizations have many more people exploring and using machines to process video. We hope you found it intriguing. Perhaps you spotted some archive gems from the past that you never knew existed, or maybe you even saw a little glimpse of the future. But I think I'll leave the final word to you-know-who.

Speaker 2

Wasn't I clever?

Speaker 1

Maybe only for a few minutes. There's so much more to learn.

Speaker 2

But for now, goodbye. Professor Hannah Fry continues her exploration of the AI revolution in AI Confidential on BBC iPlayer. Press red to watch now.