

## Unit 1: A global village



### Part 1: At home around the world

We live in an increasingly mobile world. Today, more than at any time in the past, we are in the position of being able to travel wherever we want, whenever we want.

These days, we think very little about getting on a plane to fly domestically, to another city in our own country, or internationally, to a far-flung destination. But it's important to remember that the first commercial transatlantic flights didn't start until the 1950s, and for a long time flying was a time-consuming and expensive business that simply wasn't accessible to everyday people.

Technology fuelled the development of international transport, but, even more significantly, it has also transformed the experience of international travel and communication beyond all recognition.

In the past, for those who travelled internationally for leisure or to live and work in another country, communicating with family and friends back home was a challenge. Less than 100 years ago, people had to rely on letters that could take months to arrive. While you were moving around and didn't have an address, you had to get mail sent to the local post office – this was called *Poste Restante*. If something was urgent, you had to send a telegram. But today, it's now nearly as easy to stay in touch with a friend living or travelling on the other side of the world, as it is with the one standing next to you.

For younger travellers, it's almost impossible to imagine how people explored other countries and lived overseas in a world before the Internet and mobile technology.

Nora is from Ireland, but she is currently living and working in England. Mark is British. He's lived and worked all over the world, but now he lives back in the UK where he grew up.

**Nora:** *My name is Nora. I'm from Galway in the west of Ireland. I'm 22 and living in Oxford now. I've been to quite a few different countries, just travelling and tourism trips, but I've also worked abroad a bit. So, right now, I'm working in Oxford in the UK, but I've also lived abroad in France for studying for one year, and I've worked as an English language teacher in summer camps in Italy, and I've also volunteered in institutions with children and adults with special needs in Belarus. And this summer I was in Hong Kong and Shanghai teaching in summer schools there.*

**Mark:** *My name is Mark. I'm 54 years old and now I live in Oxford in England, but before that I've lived in quite a number of places all over the world. I lived quite a long time in Spain, seven years in total, in a couple of different places. And I've lived in Italy and I also lived a couple of years in South America, in Colombia. Apart from that ... they're probably the only places I've lived for a long time – a longish time – but I've travelled quite a lot in different countries all over the world. I've travelled quite a long time in India.*

*I think of myself as a citizen of the world; home is where I am. I don't have strong roots either in a particular town or even in a particular country. I feel European. I can feel at home quite easily in many parts of the world: many places that I've been. I like that freedom of sort of living – you know, of travelling and having not much stuff.*

## Part 2: Just a touch away

While Mark and Nora have visited some of the same places, they have had very different experiences of international travel. Mark started to explore the world long before the Internet and social media.

**Mark:** *I think about the big trip that I made sort of after university when I went to India. I was there nearly a year.*

*At this time, you didn't have very much contact with people back at home because of course we didn't have the Internet. You had your rucksack and your guidebook and your Lonely Planet guide, and really the contact you had with people at home was postcards, occasional letters .... You get letters sent out to Poste Restante in like little post offices in different places in India, where I figured I was going to be in a month's time or around Christmas. But you're always communicating with people, you're always reading what people have written a*

*month or so earlier and they're reading what you wrote a month or so later because it would take a long time. I don't think – the time I was in India, I don't think I made more than one or two phone calls home.*

For most of his early travels, Mark had to rely on a film camera to record his experiences. He didn't see the photos he had taken until he returned home and had the photos developed and printed out.

*When I was in India I had a terrible little camera and I took one film of pictures the whole time. It was 36 pictures in the entire trip! And most of them didn't come out, of course, because that was the way it was in those days.*

Nora has only experienced travel in the Facebook age.

**Nora:** *Of course I take my phone. I don't take a camera because I just have the camera on my phone, which I think is quite common nowadays.*

*I normally use messaging apps: so, classic Facebook Messenger, WhatsApp, those kind of applications that I think are very popular these days. And as well I think it's not exactly directly keeping in contact when you post photos on social media: people can like and comment on it and it's – it's almost like you're not having a direct conversation with people, but it's like they kind of know what's going on in your life in a funny way, and you can kind of keep up-to-date with their news without directly interacting with it. I do think that it's, yeah, it's a really big part of my life – using social media and messaging people. I hope that doesn't sound too sad, but I don't think that's that unusual either!*

Today, when we share so much of our lives on social media, the photographs we take aren't just reminders of the places we have seen on our travels.

*And I know perhaps sometimes I feel a little bit distracted and keep thinking about the impact that my travels might have on my social media presence, or something. Like, if I see a nice castle or something, like, 'Oh, I must take a photo of that and put it on Facebook, and what caption should I write on it ...? And what filter can I use on Instagram ...?' So, maybe you're not living in the moment quite so much.*

*I think if I lost my phone I'd be really devastated. If I didn't have access to my Facebook account it'd be really difficult to get in contact with people. It's a – you know, it sounds like a nightmare situation – like, you know, maybe I'm dramatizing it a bit, but I think it would be really difficult.*

There's no question that technology has transformed our experience of travel, but maybe it's also changing our idea of what 'home' means. Can you really ever miss home, when it's never more than a touch away?

## Unit 2: Making a difference



### Part 1: A two-minute solution

Plastic pollution is a slow-motion tragedy. It's a disaster that we've been watching unfold on the news and in TV documentaries over the last decade.

Today, it feels like we've reached the point where the scale of the environmental emergency facing us is overwhelming. And, with a problem that's so enormous, it's hard to imagine how as individuals we can make any difference. It's hard ... but it's not impossible.

It's autumn, and for the past week, people around the UK have been taking part in beach and river cleans organized by the environmental charity Surfers Against Sewage. Groups of hundreds of volunteers, of all ages, have spent hours collecting and recording the plastic pollution at nearly 500 events that were part of an annual big autumn beach and river clean. Between them, they've collected 36 tonnes of rubbish.

The popularity of events like these is a clear sign of the growing awareness of the issue of plastic pollution, and of people's desire to be part of the solution.

But what can you do if you don't have a couple of hours to spare, or can't make it to an organized beach clean? Well, you can start to make a difference with just a couple of minutes.

**Martin:** *My name is Martin Dorey. I am the founder of a project called the '2minutebeachclean' ... and the 2minutebeachclean is a campaign to try and inspire people to spend two minutes picking up litter, each and every time they go to the beach.*

*I firmly believe that everybody on this planet has a part to play in the plastic problem, and I believe that everybody can make a difference.*

Martin first noticed a problem with plastic pollution on his local beach in 2009. He wanted to do something about it.

*I decided that I would use social media to try and encourage people to help me clear it up. So, I started using the hashtag '2minutebeachclean' and I went and took pictures of my two-minute beach cleans and posted them to Twitter and to Instagram, and it kind of just exploded from there.*

*Two minutes is key, because it's nothing. So, if I say to you, 'Could you help me with something? It's only going to be two minutes', it's nothing to you.*

Today, there are hundreds of 2minutebeachclean boards around the UK. These boards have simple instructions, along with litter pickers you can borrow, and bags you can use to collect rubbish, making it easy for everyone to get involved.

## Part 2: Working together

Social media has played a vital role in the 2minutebeachclean campaign. The boards encourage people to take a photo of the rubbish they have collected, and to post it with the hashtag '2minutebeachclean'.

**Martin:** *Social media's vital because we invite people to take a picture and then upload it to social media, and that gives us the weight ... that what we're doing, we can count it, if you like. And it's just a way of people being included; so, there are lots of people who do beach cleans, but then they maybe felt like they were alone, but when they post to social media they join a kind of family or tribe of people doing exactly the same thing, so they can start to feel that their effort is adding to somebody else's effort, is adding to somebody else's effort ....*

With the help of social media, the 2minutebeachclean idea has been spreading around the world.

*And when you look at the Instagram posts, we've had them from every continent, including Antarctica, and there are something like 88 or 89,000 of them to date, of those that spelled right. So we know that there is a minimum amount of litter being picked up, which is great because it means that our – our campaign is effective.*

The 2minutebeachclean movement isn't just encouraging people to clean up plastic pollution: it is also trying to change people's behaviour when it comes to using plastic.

There are a number of items that always appear in any beach clean. These include plastic bottles, bottle tops, food wrappers, and plastic cutlery – including straws – and cotton bud sticks.

*None of us need to use any of those items, so if we all cut them out tomorrow we reduce the amount of litter going into the sea by one third, and that's amazing. And that means that we can all make a difference.*

*Single-use water bottles are a really great example of our world going mad. It costs 500 times more to buy bottled water than it does to get it from a tap. We think nothing of asking for tap water in a restaurant. Why shouldn't we do it somewhere else? And the reason that we feel bad about it is because we don't want the shopkeeper to say, 'There's a fridge full of water there and they're £1.50 each.' And that's a symptom of how crazy our society is, that everything has a price, and a basic human right like water has been packaged up, bottled up, and sold to us, who are being stupid for buying it when actually there's a perfectly good solution coming out of every tap.*

But, whether you are taking part in an organized beach clean or doing a two-minute beach clean, is picking up some litter off a beach really a solution to the plastic pollution crisis, when the scale of the problem we face is so enormous?

*It's too big for us to be able to understand, but if you say to somebody 'Pick up litter for two minutes', and tell them it's enough, they will be able to stop feeling guilty about not doing it all, but that two minutes is enough because you add that to the other two minutes and the other two minutes and the other two minutes: it soon adds up. It's – it's – it's a message to invite them to do more. So, once you've done your two minutes, start there and move on – do eight, ten.*

*I love it when people send me pictures that say, 'I did a two-minute beach clean but it turned out to be 40 minutes', and they go 'Ha! Ha! Ha!' you know. I say, 'Brilliant, you've done 40, fantastic, carry on!' You know: I don't mind that they think that two minutes is a bit of a joke, because it's starting that matters, and if we can get people started with two minutes then who knows where they'll go on to – on to, whether it's an*

*hour, or whether it's changing the way they live, or whether it's cutting out plastic, or whether it's picking up litter in the park, in the mountains, on the beach; I don't care, as long as they start.*



## Unit 3: Courage to be kind

### Part 1: Stories of kindness



Abi Elphinstone is a successful author of children's books.

**Abi:** *The first set of books I ever wrote was a trilogy. The Dream Snatcher came first, the sequel was The Shadow Keeper, and then the finale was The Night Spinner. After that, I wanted a change of format. I wanted to write a standalone book, so Sky Song exists as a story completely as a whole by itself.*

*Now though, I'm writing a brand new series called The Unmapped Chronicles and that, I think, might be five books, which I think might be called a quintet ...? But I don't know, but we'll see. I've written two and I hope to write three more.*

*I write adventure books with a little bit of magic. So, I straddle two genres: adventure and fantasy. My books are quite scary in parts, so readers as young as seven sometimes read the books but get a little bit scared.*

*So, I write a different story with every book – obviously, the plot is different – but the themes, the messages of every single book I write are the same. I believe that values of courage, kindness, hope, and friendship are the cornerstones of what it means to be human, and we live in a world that is often politically, socially, morally, very turbulent, very difficult to understand. And so I think now, more than ever, it is important to return to this idea of being tolerant, being kind.*

Abi hasn't always been an author and her journey to getting her work published wasn't always easy.

*I began working life as a teacher in a secondary school and I taught for five years – English, again – and I tried to write books at the same time as teaching. But if anyone has been a teacher they'll know that there is a lot of marking, it's a very tiring job, so the time I gave myself to write was a tiny bit, you know, two hours, one hour every night after I'd finished marking. So eventually, on my fourth book, my 97th try with a literary agent, I got an email saying, 'Yes, we love this and we would like to represent you.' So it took a long time, but I think inside every person, or maybe it's just some people who face ongoing rejection, there grows a quiet grit, a*

*determination to succeed no matter what. So I just kept holding on to the positive comments and tried to rework them into a book that was going to be, perhaps, marketable, successful, enjoyable for readers.*

## Part 2: The creative process

Abi's books are full of adventurous characters living in wild places – so, where does she get the inspiration for her stories?

**Abi:** *I start every story I write by trying to come up with an idea that nobody else has stumbled across yet, and sometimes I find these ideas walking down the street or strolling in the park – never really at my desk, because that's too pressurized to think of an idea, but it happens more organically if I'm walking and daydreaming. Once I've come up with an idea that I believe in – that takes a long time – I then usually go on an adventure to a far-flung place, because I write about wild settings, to secure, cement the setting, to really grow the fictional world I want to write about.*

*So, I've been out to the Arctic to research this book, called Sky Song, which is set in a snowy kingdom called Erkenwold. And I went dogsledding, I watched the Northern Lights, the closest thing I've ever seen to watching magic unfurl in our world, and I saw hundreds of orcas, killer whales, feeding on tiny fish called herring, under the sea. So, those adventures formed the basis of this book.*

*I also like writing about tribes, people who live in the furthest corners of our world that often maybe have a story to tell, but, because of where they live, the story isn't told. So, for the heroine of Sky Song, a girl called Eska, I went out to Mongolia to live with the Kazakh eagle hunters. I'd seen a photograph by an Israeli photographer, Asher Svidensky, of a girl called Aisholpan, and she is – well, she was – 12 years old when the photo was taken, and she is the only eagle huntress in a tribe full of men and boys and I thought that was cool, the only girl. So, I knew I wanted to meet her, to – to write this book.*

Abi wrote part of *Sky Song* while she was in hospital.

*I spent four months in hospital – a third of a year – and, during the course of that time, the midwives and the doctors and my friends who came to visit me were so unfailingly kind, and I wanted to write a book – Sky Song – that celebrated this theme of kindness.*

Abi has an unusual way of planning her stories.

*So, I'm dyslexic, and when I started writing I was very scared that that would be a problem and that I wouldn't be able to be a successful writer because my ideas often are a bit confused and tangled. But, what I realized is that dyslexic people think hugely creatively and they notice things other people miss. So, I learned that if I doodle, if I draw the world I want to write about as a map – so, maybe I put a forest here, a mountain here, a sea, a river, a lake – then I might have my characters travelling from place to place and at every place they encounter an obstacle. Maybe they're betrayed in one place, they're robbed in another, they discover something they weren't meant to see at the river, and then slowly but surely my plot starts to take shape.*

*So, I used to think doodling was wrong. My teachers used to say, 'Stop doodling, start concentrating!' but I think drawing your way into a story, especially if you're dyslexic, can be a very, very useful tool.*

Today, Abi spends a lot of time visiting schools and talking to the thousands of children who love her books and are inspired by her stories.

*I want to talk to young children about this idea of being creative. I'm not an obvious sort of person for being an author: I have dyslexia, and yet I'm an author; I had 96 rejections before I became an author. So, I want to tell children that the creative people are often the people who are brave enough to fail.*

## Unit 4: What's your news?

### Part 1: Fake news



It seems these days we can't escape 'fake news'.

We all know that our social media feeds are full of news articles and stories that are biased, exaggerated, or just plain fabricated.

So, how come so many of us continue to consume and share content without questioning its credibility?

These stories may start on Facebook or Twitter, but, once we share them, they eventually work their way into articles in the mainstream media. And these articles are then shared again on social media. And so the endless cycle continues.

Is there a way that this flood of fake news can be stopped? Or, can we all become better at identifying and simply ignoring it?

In recent years, these questions have become an important field of research.

**Jon:** *My name is Jon Roozenbeek. I'm a PhD candidate at Cambridge University, and I mainly study fake news and disinformation.*

*Fake news is a – is a difficult term, because everyone is using it and it is used in a lot of different contexts and by a lot of different people with a lot of different agendas and ideas and political convictions and so on. And it doesn't mean the same thing when two different people say it, so that is why I myself prefer the term 'disinformation', which is much more clear.*

*Misinformation is information that is false and that includes simple human error. If I make a mistake and I say something that is incorrect, and I publish it somewhere online, that is what I would call misinformation.*

*Disinformation includes the intent to deceive, so I must actually want to give you wrong information for it to be disinformation.*

So, are there things that can be done to stop the flow of disinformation? Jon believes that there are four possible solutions.

*The first is legislation: so, trying to write laws that regulate the flow of information in such a way that fake news becomes less prevalent. The downside of this is of course that you run into issues of freedom of the press very quickly.*

‘Freedom of the press’ is the principle that government shouldn’t interfere with or censor the media.

*The second one is algorithmic fixes.*

All social media sites use ‘algorithms’ to choose the information they present to their users. This is the programming code that decides what content to show you, based on what you like and share.

*So, for example, on Facebook, you will see certain posts before other posts, and Facebook can decide which posts you see first. So, in that way, you can have Facebook tweak the algorithm in such a way that fake news becomes less visible. The downside, of course, is that Facebook then decides what it wants you to see, which is not great.*

*The third category is fact-checking, meaning correcting false stories, which is a good initiative and, for sure, that is something that needs to be done. The problem is that you’re always going to be behind, simply because it is much harder to fact-check something than it is to create and spread a lie.*

*And the fourth category is education, or what you would call ‘media literacy’, which focuses on the individual level, meaning making people more resilient against deception, against manipulation, against disinformation.*

*The upside is that this has the potential of being very effective and you don't run into issues of freedom of the press. The downside is that it's very expensive and that it's difficult to implement in many countries.*

## Part 2: Improving your chances

If it is so difficult to stop the flow of disinformation and fake news, is there a way we can protect ourselves from becoming infected with it?

Jon believes that 'inoculation theory' could offer a potential solution.

*The idea behind inoculation theory is that information can work in the same way as a virus or a bacterium.*

*So, assuming that information – misleading information – can be akin to some kind of infection, how do you make sure that people don't become ill? And normally in medicine that happens through a vaccine. So, a vaccine is a weakened version of a certain virus, or a certain bacterium, that is introduced into the body, and it doesn't have the power to kill you or hurt you or make you ill, but it does make sure that the body creates antibodies against that virus, so that the next time that the virus actually enters your body – the real version of it – you already have the antibodies and you don't become ill. And inoculation theory says information can work the same way. So, you can be – you can develop a resistance against misleading arguments by pre-emptively, before the manipulation attempt occurs, thinking about the ways in which you might be deceived.*

And what's a simple way to vaccinate people? Get them to play a fun game: a game where they have to create disinformation!

In the game, players are shown a short text or an image, like an article headline. They can react to these in a variety of ways. The player's score is measured by 'followers' and 'credibility'. The aim of the game is to gather as many followers as possible, without losing credibility.

But the important thing is that if a player acts like a *producer of disinformation* they will *gain* followers and credibility, but if they lie too obviously they will lose credibility, and if they act like a good journalist reporting just the facts, they will lose followers.

So, the player has to learn to use all the tricks of effective producers of disinformation to succeed in the game.

*So, it's – this active component is very important, so it's not just that someone tells you this is how you might be deceived, this is what fake news looks like; instead, you create it yourself, you think about it yourself, how you can use these strategies to, you know, forward your own interests in the game, which is a much more resilient approach to training how to recognize these things than just me telling you something.*

Jon's hope is that, by the end of the game, the player will have received a small dose of the fake news disease, and they will be starting to build up antibodies. So, the next time they are online, they will recognize the disinformation strategies being used on them, and think before they share.

So, why not play the game and vaccinate yourself today?

## Unit 5: Acting robots

### Part 1: Robothespian

**Will:** *My name is Will Jackson; I'm the director of Engineered Arts. We're a small company based in the UK that specializes in building robots.*

*Building robots is not just about mechanics. It's not just about making pieces of metal. It's about software, it's about engineering, it's about mechanical engineering, and it's really about integration: it's about putting all of those things together to make a working system, a working machine.*

There are currently 18 members of the Engineered Arts team. They come from a variety of backgrounds.

*It's very multidisciplinary. So, everybody – from creative people, who are working on the design or the content, the kind of things the robot would say and do, how the robot would look, through to mechanical engineers, who are designing perhaps how it would move in a particular way ... electronic engineers, who are designing the transistors, the chips, and the components and the circuit boards they go on to. So there's many different aspects to building a robot like this.*

In the offices upstairs, the designers and engineers use computer-aided design systems to develop new and improved versions of the robots. Downstairs, every model is assembled by hand in the factory workshop.

But, you're never going to find any of the robots they are building here working in a factory. When they are finished, these robots won't be replacing workers on an assembly line: they'll be in the spotlight, on a stage, in front of an audience.

*Robothespian is about automating acting. And we had an idea – this goes back about 12 years – we were asked to do some science explanation for a science museum, and we kind of thought the best way to do it was just get a person to talk about it. But a person doesn't want to repeat the same story all day every day. So we thought, 'Well, you know, maybe we could automate this kind of storytelling and come up with a robotic actor to take the*



*tedious role away from a human.’ So, rather than having to repeat the same story to every person that comes along, the robot could do it for you. So, that – that was the birth of the idea for Robothespian.*

Robothespian can be pre-programmed with 3D animation software. The user can choose in advance what the robot is going to say, what actions it’s going to use, and even when its cheeks are going to change colour during a performance.

And Robothespian can also be controlled remotely. The robot has cameras, so the operator, who can be anywhere, is able to ‘see’ through the robot’s eyes. The operator can then directly interact with an audience, speaking through the robot, giving the illusion that the robot is alive and thinking – that the robot is sentient.

The robot’s software has face-recognition technology, so its camera ‘eyes’ are always scanning for faces, making ‘eye contact’ with its audience. The movement of its head, the way it engages with the audience, and even how it blinks, all add to the illusion that the robot is human. And all of these characteristics are vital to its purpose.

*The only reason to make a human-shaped robot is to talk to you. Because that's what you're used to. You're used to something that makes eye contact with you, that smiles at you, that might wave to you. These are the ways we communicate as people, and, if I want to make a machine to communicate with people, I need to emulate those human characteristics.*

## Part 2: Robots for improvement

A robot who can sing and quote Shakespeare is an engaging and entertaining example of robotics in action. While it’s very unlikely that many human actors will lose roles to Robothespian, or that you’ll see it on-screen in the latest blockbuster film anytime soon, this charming robot still represents some very real concerns about the ever-increasing levels of workplace automation in our society today: the fear that one day we will all be replaced by a robot.

Every Robothespian is made up of more than 2,000 individual components – from the tiniest plastic fingertip to hundreds of individual steel cogs. In the past, it would have required the work of many highly skilled craftspeople to make all these items.

Today, most of the work of producing these components is automated. Guided by computer-aided designs, a single programmable machine creates the most complex and tiny components with perfect accuracy every time. All it takes is one machine and one person.

Some experts have predicted that in the future any job that can be automated will be automated. They've suggested that by the year 2030 as many as 800 million workers around the world will be replaced by robots.

From self-driving cars to vacuum cleaners, we are starting to see more robots in our everyday lives. Does Will think there'll be a fully-functioning robot in every home in the near future?

**Will:** *Personally, I don't think so. Personally, I wouldn't actually want one. The things we're looking at is ... I think you will start to see robots in many more commercial spaces. So, if you go shopping, you might notice a robot at the door of a shop and it might just tell you that actually we've got this lovely new suit in store today that might suit you. Have you tried our delicious noodles? It might just be an advertising robot like that, or it might just be purely for entertainment. You might walk down the street and there's a robot singing and dancing and doing a little song that you think is rather charming. And entertainment has value.*

Engineered Arts have a new model – called the Mesmer – that looks less like a machine and more like a human. Its robotic skull is covered by a silicon 'skin' and it has realistic eyes and teeth. Maybe, one day in the distant future, you won't be able to tell the difference between a robot actor and a real human. But Will and the team aren't thinking that far ahead yet!

*In the short term, things are actually quite good for us. We have a lot of interest in the kind of machines that we're making: people find them entertaining, people find them engaging. So, people are using them for sales. They're using them for communication. We also sell to universities who are studying robots and want a platform to develop on. It's quite difficult to make a robot from scratch, so we are moving to a newer, bigger factory two miles down the road at some point next year. And we're investigating commercial applications, entertainment applications, but it's ... it is really about engaging with people. It's about telling a story and then primarily it's about having fun. It's about improving human existence, not worsening it.*

## Unit 6: A brand story

### Part 1: A world of brands

Today, brands are everywhere. They're on the clothes we wear, the cars we drive, the equipment we work with – even on our food and drink. But what exactly *is* a brand?

A brand is the way a business distinguishes its products from the products of other businesses. It could be the company's name, or its logo, or trademark.

As a concept, branding has dominated modern advertising. In a world where goods are mass-produced and companies compete in a crowded marketplace, a unique brand is often a corporation's most valuable asset.

But how important are brands to the people that buy them? What does a brand mean to them? Have they ever paid more just because of the brand of a product?

**Beth:** *No. I tend to think I'm quite cheap sometimes. I might – might buy a brand if it's in a discounted, like, store or online, or again, like, in a charity shop, but I rarely pay full price if something's expensive.*

**Dexter:** *Yes, I have. I'd say I research into the item that I'm buying, because I want a bit more quality, and I want a bit more value for my money. So, I usually research and then pay for the brand if I feel it's worth it.*

**Dave:** *Sure! In some cases it's justified. If you were to buy a car, an automobile, and you were to buy something like a Porsche or a Ferrari, you know what you're getting, and you know there's a lot of research and development that goes into that. Whereas a \$300 pair of leather shoes or a belt, I – I don't really feel like that's worth it.*

Branding is not a modern phenomenon, as the extraordinary story of Harris Tweed, the distinctive fabric produced on the tiny islands of the Outer Hebrides, proves.

The Outer Hebrides, also known as the Western Isles, are a chain of tiny islands situated off the north-western coast of Scotland, and are home to a population of around 26,000 people. While everyone speaks English, the native tongue of many of the islanders is Gaelic.

The largest of the inhabited islands are the Isle of Lewis and the Isle of Harris – the historic home of Harris Tweed.

Islanders have woven cloth by hand on the islands for centuries. But, in the 1840s, Lady Catherine Murray, the Countess of Dunmore, whose family owned a lot of land on the islands, decided to sell some tweed to her friends in London. The high-quality fabric was an instant success and an industry was born.

In 1909, the Harris Tweed Association was founded, and the famous ‘Orb’ trademark was granted.

Today, Harris Tweed is a global business, with the material being sold all over the world. But the cloth is still made using the old machinery and the techniques of the original weavers. And, uniquely, it’s a process and brand that is protected by its own Act of Parliament.

## Part 2: Harris Tweed

Today, the Harris Tweed brand needs protecting.

**Lorna:** *I’m Lorna Macaulay. I’m the Chief Executive of the Harris Tweed Authority here in Stornoway in the Outer Hebrides.*

*Harris Tweed Authority inspectors are there at the final stage of the production of the cloth, and, if satisfied that that cloth meets the terms of the Harris Tweed Act, our stampers or inspectors will apply a physical mark to that cloth to reassure the customer that they are buying genuine Harris Tweed cloth.*

In order to receive the Orb, the material must be made from pure wool, and must be handwoven by weavers working in their own homes on the Outer Hebrides.

*Harris Tweed, to the consumer, is a mark of quality, history, heritage, provenance. Consumers tell us it is our colours and patterns – the depth of colour and pattern – that – that means so much to them.*

Today, as in the past, it's the remarkable natural environment of the islands that inspires the beautiful colours and textures of the fabric.

There are just three mills producing cloth on the islands. The mill employees still carefully weigh out different coloured wools that, when mixed together and spun, will create the distinctive yarn that is supplied to the weavers in their homes. Then, it is with the experience, skill, and artistry of the weavers working on looms powered by just a foot-pedal that the cloth is created.

The cloth is then checked and finished back in the mill, before it receives its Orb stamp from the Harris Tweed Authority.

*The Harris Tweed Orb has traditionally always been inside as – as a quiet, discreet mark; this is the first time in our trading history of 150 years where the Orb is now being used like other trademarks, as a decoration on the external of the cloth.*

Today, Harris Tweed is truly an international brand. They produce over 1.5 million metres of cloth a year. And, while originally the cloth was used for men's jackets, today it is used in an enormous variety of products, from computer tablet covers and phone cases to shoes and even dog leads.

Harris Tweed is an unlikely success story. It's an industry located on isolated islands that still uses techniques and machinery that have been out of date for over a century.

But this is also the brand's greatest advantage. In a world of mass-produced fabric, Harris Tweed still stands for authenticity and craftsmanship, and is a guarantee of the highest quality, and most beautiful, cloth.



## Unit 7: Soulmates

### Part 1: The love of your life

Where might you first meet the love of your life? At school? At work? On holiday? Or just while you're waiting for a train one day?

Ask any couple and they will be able to tell you the story of how they met and decided to spend the rest of their lives together.

**Samantha:** *We met at a wedding in France – a mutual friend's wedding.*

**Jonathan:** *In Cannes, to be precise.*

**Samantha:** *Mm-hmm.*

**Jonathan:** *It was a lovely wedding, yeah. She was a bridesmaid and I was one of the guests, and we hit it off.*

**Samantha:** *Mm-hmm.*

**Interviewer:** *So, how did you end up together?*

**Jonathan:** *We – well, we – we hit it off at the wedding, u ...*

**Samantha:** *We were put at the same table.*

**Jonathan:** *At the same ... we were put at the same table. We got, got on very well. It was a three-day wedding so we got to know each other very well over those three days. She's from Boston in the States, so she went back*

*there; I went back to London, where I'm from, here, and we sort of had an online relationship, didn't we?  
And then ...*

**Samantha:** *Skype.*

**Jonathan:** *Skype for a couple of months, and then she came to London to do her MBA, and ... we spent about a year together in London, and now ...*

**Samantha:** *Year and a half.*

**Jonathan:** *Year and a half. And now we're in Boston, living together.*

**Samantha:** *Mm-hmm.*

**Olivia:** *We met on Tinder, an online dating app.*

**Matt:** *We were both sort of in a similar sort of mind-set. We were both quite fresh out of long-term relationships. I think we both went in, like, not really looking for anything special, but then the more we started talking, the more things progressed, and now we are, like, about two years in.*

But, in an increasingly busy world, you sometimes struggle to meet new people. And, occasionally, it takes something a little out-of-the-ordinary to bring two people together.

This is Olivia and James. They've recently got engaged, and they're planning their wedding, which will take place in Scotland next year.

Olivia and James's love story had quite an unconventional beginning.

**Olivia:** *I put myself forward for a blind date in a magazine, in a national newspaper, and nine months later I got an email saying, 'We've found somebody. Would you like to go out for dinner and meet this mystery person?' So, that's how I met James ... was turning up to a restaurant and seeing him for the first time!*

**James:** *I also wrote into the magazine, and, two days later, they contacted me and said, 'Actually, I know we said we wouldn't find anyone, but we have found someone. Would you be interested in going on a blind date?' – which – to which I obviously said, 'Yes.' And, about a month later, we met at the restaurant.*

*I was told that – I was told Olivia's name, and I was told what she did, how old she was, and a few – a few interests, but that – and that was it.*

**Olivia:** *Yeah, it was the same, and they told me that James was interested in architecture, writing, and theatre, I think.*

**James:** *Yeah.*

**Olivia:** *Oh, sailing – sailing, yeah. Three things, so ...*

**James:** *Yeah; I remember you were interested in the arts, I think, and also architecture. I think that's where they connected us.*

## Part 2: A love story

The very first time James and Olivia met was at a restaurant booked by the *Guardian* newspaper. Today, what do they remember about that dinner?

**Olivia:** *Well, that evening was very memorable. We talked about all kinds of different things: we talked about sailing, and – and how we'd done the same run a few weeks earlier, before we'd met.*



**James:** *There were lots of things, but the – the most remarkable thing was just how long we talked: it was non-stop for about four hours until the restaurant closed.*

Even before they had written the feedback for the newspaper article, Olivia and James knew that they wanted to see each other again.

**Olivia:** *After the date, I got a text from James – the next day, which is perfect timing! And it was a really lovely text, saying what a lovely evening he'd had and it was very nice to meet me. So, I immediately replied and said, 'Brilliant, let's meet up next week.' And so we arranged a time to meet up.*

So, Olivia and James became a couple. And two years on, what is it that makes their relationship work?

**Olivia:** *Oh, that's a good question. I think what ... I think what makes our relationship work is, well, we've both got a good sense of humour, and I think James is hilarious, so I'm laughing a lot, all the time.*

**James:** *That is very important – humour – I think. Not just general laughing, but being able to diffuse moments with humour is very important, and, if you don't share a sense of humour, it's hard to do that.*

And the relationship works so well that they've decided to spend the rest of their lives together.

**James:** *We had known each other for just over two years when I proposed, yep. About two years and two months, I think. And we were going to the theatre to see a play, and it's a – it's the National Theatre, which is quite a cool building, and I thought we could – I could propose somewhere in the buil– in the theatre.*

*So, we then arrived at the theatre. Olivia said, 'Oh, I'm really looking forward to lunch, I'm very hungry.' I said ...*

**Olivia:** *I had been promised lunch before the play, and then there was this change of plan, and I got really grumpy.*

**James:** *I said, 'Er, why don't we just go on a tour?'*

**Olivia:** *'Cos we don't have time!'*

**James:** *'It'll be brilliant! It will be a great, like ... oh, they're really good, it'll be really short.'* You said *'No it won't'. 'Come on, it will be brilliant.'* And so, Olivia stood there with her arms crossed, whilst I waited for the lady to arrive to take us.

*She took us straight to the biggest stage at the National – there are three stages, the biggest is the Olivier Stage. We needed something to prompt us, and so she said, 'Well, you have the audience of the Olivier here, is there anything you'd like to say to the audience?' And Olivia laughed, and I said, 'Well, actually, Olivia, come and sit with me on the chair' – on the two chairs – and she was, 'Oh no, what are you going to do now?' and I said, 'I've actually been planning this all week', and she said, 'Planning what?' And at that point, I sort of slid off my chair and onto my knee, and asked her to marry me. And she sort of gasped and said 'Yes', and grabbed me and a big hug.*

And the news of their engagement didn't just thrill family and friends.

**Olivia:** *The girl who set us up, she was lovely, and she was lovely, you know, as things worked out. We stayed in touch with her, and, you know, we told her quite quickly when we got engaged, because she'd been doing that job for quite a number of years, and we were the first couple she'd set up to get married, so ...*

**James:** *Apparently, when I sent the email or text or whatever it was, she stood up in the middle of their open plan office and put her hands above her head and said, 'We – we've got a blind date wedding!' So, yeah; it meant a lot to her, I think.*

**Olivia:** *Yeah!*

## Unit 8: Wild Tree Adventures

### Part 1: Up in the trees

Climber Tim Chamberlain can often be spotted high among the branches of one of the many spectacular trees that grow in the countryside where he lives, in the south of Scotland.

**Tim:** *My love of climbing came from childhood, I suppose. I climbed trees as a child, but very small ones ... and then I climbed slightly larger trees and got a little bit scared, and then I took up bird work and spent a lot of time working at height with birds in the trees, and I just love being up there.*

*Trees give me an amazing sense of tranquillity and sort of ease of being up there. When I climb a tree ... it takes you into a space that is very relaxing and rewarding and away from all the chaos of the rest of the world.*

Tim, whose previous career was monitoring rare birds, now runs his own company called Wild Tree Adventures. The company, which is based in the Scottish Borders, is a recreational tree-climbing company.

*This company came about because I decided to move back to Scotland to help people see the magic of tree climbing, and see the magic of trees that are here, right on their doorstep, that they don't really necessarily notice: too busy walking past them or driving past. And what we do is, we get people to stop and look up, climb up, and actually experience the magic of being up in these trees right on their doorstep.*

Most of us who are adults probably haven't climbed a tree for a very long time. And the experience that Tim offers his customers is quite different to that memory of playing in the trees of your local park as a kid.

*What we do is different, because we are taking people way up high into the canopy of the trees, using specialist rope and equipment to get people up into really complex and interesting situations – to experience what it is like to be up in the trees.*

*The type of people that come and climb with us are all ages really: some of them can be young as six, and we had a lady for her 80th birthday party the other day – she was fabulous, climbing right up high into the canopy of the tree! So our tree climbing is for anyone, really, as long as you're keen, have a sense of adventure, don't mind a little bit of a challenge ... and if you have a fear of heights it doesn't matter, because we have ways to overcome that.*

## **Part 2: The climbing experience**

Today, Tim is at the stunning Dawyck Botanic Gardens, which is home to some of the oldest and tallest trees in Britain. The 65-acre site has tree specimens from around the world.

Tim is preparing to take a customer, who has never been climbing before, up one of Dawyck's most impressive and unusual trees. This Douglas fir, which was planted nearly 200 years ago, has grown to nearly 30 m tall. No one is quite sure why the tree has such an unusual shape, dividing off into nearly 20 separate stems, like an octopus.

Making sure that the climber is safe while they are having fun is the most important part of Tim's work.

**Tim:** *Children today are often told that they can't climb trees, because we are very risk-averse in today's society and that means that people don't know how to judge risk, and, actually, what we are doing is we are doing something dangerous but we are doing it safely.*

*With a tree such as the one we are climbing today, I have been here and specially risk-assessed it and spent a lot of time inspecting and checking, so there's a lot of behind-the-scenes work that goes on just to make sure that it's all very safe.*

Even with all the safety equipment – the helmet, the harness, all the specialist ropes – the tree still looks daunting to the new climber, so Tim clearly explains how to climb safely using the system of ropes and knots. He is reassuring and encouraging, and soon the climber is ready to go.

Tim makes it very clear that what they want to do is climb at their own pace. So, slowly, they start to make their way up into the branches of the magnificent tree.

Initially, Tim watches from below, but after a while he comes up to join the climber.

For someone who's not climbed before, the climb can be tiring. About halfway up the tree, they are exhausted, and it's time for a break.

Up in the tree canopy, where they can also enjoy stunning views across the gardens, they can really appreciate the beauty of the tree itself.

*When you're actually up inside the tree, you're feeling the tree moving and swaying, you get huge understanding of how the tree actually acts and lives in different weather conditions. And, often, that's where the wildlife is – right up there in the canopy – and you get the birds flitting right in front of you, and that's really special.*

But relaxing on one of the tree's high branches is also a good opportunity to look down, and it's at this point that some climbers can lose their nerve.

*Sometimes they feel elated being up there in the canopy; sometimes they feel a little bit nervous, because that's when they look down and realize that they are 20-something metres up above the ground and the people who are waiting and watching are very small.*

*And, if people get scared, sometimes I get them to shut their eyes and just listen, and in that little tranquil moment they realize that they are fine ...*

Up in the tree, there's time for Tim to share some of his knowledge of the trees, the landscape, and the wildlife of Dawyck. There's also time for a quick snack, which Tim has baked himself!

It's up to the climber how high they go: they can stop wherever and whenever they want.



Time flies when you are having fun, and eventually the climber has to come back down to earth. That's much quicker than climbing up!

Tim gives everyone who climbs with him an unforgettable experience. It's an experience that's totally safe, but also thrilling. It really is a Wild Tree Adventure!

*For people who haven't climbed since childhood, I would say please come and give it a go – it is a very exciting and rewarding experience and, after a little bit of learning, which is always good, then you'll rediscover your joy of climbing up these fantastic trees.*

## Unit 9: Living history

### Part 1: The old ways

It's a beautiful spring morning in the quiet countryside of County Durham, in the north-east of England.

On a hill, overlooking the gorgeous countryside, sits Pockerly Old Hall. The new hall was built in the late 1700s, and it's now a bustling hub of a home. In the kitchen, the maid is making bread for the family. She doesn't need to follow a recipe: it's a job she has done every day since she came to work at the house as a teenager.

Down at Home Farm, the farmer is preparing a field for the crop of swedes that will be planted soon. It's now Victorian times, but farming is still back-breaking work. In a time before tractors, the farmer relies on his workhorses, and his own skill and experience, to get the job done.

Of course, none of this is real, but this *is* how life used to be in the north-east of England in the past. This is Beamish, the Living Museum of the North. Visitors come here to see how people used to live, eat, travel, and work in the period from the 1820s to the early 1900s. Situated close to the city of Newcastle, Beamish is one of the most popular museums in the UK, with close to half a million visitors every year.

And the museum's success is not exceptional. In modern times, there seems to be something of a resurgence in interest in how we used to live. Living history museums and carefully preserved ancestral homes are increasingly popular destinations for people to visit.

So, why do we seem more interested in seeing how people used to live than how they live now? Why are we so interested in the past?

**Beth:** *It's our heritage; it's where we come from. I live in a really old city – I live in Edinburgh in Scotland, and the history's everywhere. You can't ... you walk down every street and it's full of old buildings, and you imagine who might have lived there, you know, 100 years ago. Who – who stood where you were standing now?*

**Louisa:** *I think some people probably might not have been interested in finding out about their past and their heritage, but then they might be drawn to it because they fall in love with a – with a book, or a movie, or a TV show that they're really interested in, and that sort of triggers some interest.*

Nearly everyone agrees that we have a lot to learn from the past, but do they agree that in the modern age it is still important to keep the old skills alive?

**Kathisha:** *Definitely! I believe so. I think we need a little bit of the past to mingle a little bit with our present. Too much ... I think, if we got rid of it, then we would just lose who we are.*

**Janet:** *I think old skills in terms of cooking and baking will always be important in day-to-day life, but ploughing with horses and, you know, knitting, may not be as important. I think it's a great skill to have, but given, you know, modernization of technology and – and mass production of things, I think many of those skills are probably going to go by the wayside into the future.*

## Part 2: Bringing history to life

At the Beamish Museum, the staff work to provide their visitors with the most authentic historical experience possible.

The museum opened in 1972, but work started on the collection long before that. In the late 1950s, the old customs and traditions of the north-east were starting to die out as industry in the region declined.

The communities that used to serve the collieries, shipyards, and farms were disappearing, and with them the old way of life was being lost. A project started to collect things from the past – anything and everything that used to be part of everyday life. The people of the region gave generously: thousands and thousands of objects, from kitchenware to steam engines. And these all became part of the recreation of the vanished communities at Beamish.

Today, at the centre of the 300-acre site, is the recreation of a town from the turn of the century. The town is complete with homes, shops where you can buy handmade sweets, and even a local dentist!



Visitors travel around the site on beautifully restored trams.

They can visit Pockerly Old Hall to see how life was lived by the local landowner, his family, and staff.

And they can visit a Colliery Village from 1913, and see the cramped workers' terraces where women used to bake bread in communal ovens behind their houses. They can also see the local school, where the boys and girls were educated separately, and the tiny pit ponies who used to work down the mines. Visitors can even get an authentic taste of the past from this takeaway, where the cooking is still done with coal fires, just like it used to be. And the fish and chips are just as popular and delicious as they have always been.

And, more than just a museum, Beamish has become an invaluable educational resource. As well as offering its visitors a glimpse into how life used to be lived, it helps to preserve and pass on old skills through a range of short courses.

And the old ways are all brought to life by the costumed demonstrators who work at the museum. It's their job to interact with the visitors, to provide insight and explanations of the world around them. Visitors range from primary school children to the elderly, and their reactions to the experience can be very different.

Sonja works as a maid at Pockerley Old Hall. So, what do the older visitors find interesting when they come to see her in the kitchen?

**Sonja:** *Really they're interested in the things that they can remember from their childhood or from their grandmother's house. So it's: 'Oh! I used to have one of those', or 'I can remember when we used to use this', you know. A lot of things, although we're set in the 1820s, a lot of things carried on until early – early last century, so things – you know, if things weren't broke, you didn't replace them, so things went from generation to generation to generation.*

And how is this different from her younger visitors?

*The children, when they come, they're absolutely amazed by the fire. A lot of them have never seen a real fire before – some of them are actually quite reticent, they don't really want to go too near it because obviously they've been told, 'Stay away from fire.'*

Sonja learned her baking skills the traditional way. And after working at Beamish for many years, she is used to her life as an 1820s maid, and there are few things in the modern world that she couldn't live without.

*Well, the skills that I'm using today are skills that have been passed on from mother to daughter through generations, so I'm just doing what my mother used to do, and what my grandmother used to do.*

*I think I could pretty much live without everything that we take for granted today. But the one thing I think I couldn't really live without is international travel. The ability to move from one country to another with such ease, I think, is very underrated.*

The author L.P. Hartley once wrote that 'The past is a foreign country; they do things differently there.' At the Beamish Museum, they make visiting this foreign country as enjoyable as possible, but they also help to keep it easily accessible to every generation.

## Unit 10: The Vikings

### Part 1: Fact or fiction?

This is the beautiful city of Copenhagen in Denmark. The city, situated on the eastern coast of the island of Zealand, is Denmark's biggest city, and has been its capital since the beginning of the 15th century.

Today, the city is home to over a million people, and it's a bustling and cosmopolitan city with stunning palaces and parks, great shops, and world-class restaurants.

But Copenhagen's origin is as a small fishing village established back in the 10th century by the most famous, and feared, of Denmark's old inhabitants: the Vikings.

The legacy of a great Viking empire that dates back more than a thousand years can be seen across Europe to this day.

But now, it's very hard to separate fact from fiction when talking about the Vikings. So many myths, sagas, and legends have grown up around the medieval civilization of raiders, traders, and intrepid explorers that it's difficult to know which of the stories are actually true.

Over a thousand years after the end of the Viking era, new technology, working in tandem with old skills, is helping us to learn more about this great civilization. And some of the most important work is happening not far from Copenhagen, in the historic town of Roskilde.

The town of Roskilde is around 30 km west of Copenhagen, sitting at the head of the Roskilde Fjord. In Viking times, the town was the capital of Denmark and a vital trading centre.

There had always been rumours that Viking ships might have been deliberately sunk in the Roskilde fjord in order to protect the capital from attack from the sea. For years, fishermen and divers had been finding parts that could have come from Viking ships in shallow water at Skuldelev, 20 km from Roskilde. But it wasn't until 1962 that work began to excavate this area of the fjord, and five ships emerged from the mud.

The ships had probably been at the bottom on the fjord since the 11th century. They were in thousands of pieces and this left the archaeologists with a massive, intricate jigsaw puzzle that would take them many years to solve.

Every piece of timber needed to be carefully recorded and preserved so that the ships could be rebuilt in the museum that had been specially constructed at Roskilde.

Today, visitors can see the result of this painstaking work in the museum hall that is now home to the ships known as Skuldelev 1, 2, 3, 5, and 6. The ships range in size and purpose: from a cargo ship used on trading expeditions to a 30 m ocean-going longship, which would have been manned by a crew of 65–70 warriors.

All these skeletal reconstructions were just the first step in a process that was to reveal an enormous amount about the Vikings.

## Part 2: The Skuldelev ships

The Viking Ship Museum at Roskilde is more than just a museum: it's also home to a research institution and a working boatyard, where they use 'experimental archaeology' to uncover the secrets of the Viking shipbuilders' prowess.

The team of archaeologists and ship-builders at Roskilde take all the information from the remains found at the bottom of the fjord and use it to create exact 1:10 scale models of the ships. These models then provide the template for full-scale reconstructions that are built in the shipyard.

Importantly, the entire process of building the replica ships is done using reproductions of tools that would have been used by the Vikings.

Finally, the completed replica ships are sailed and tested at sea, in all weather conditions. And it is through this process of testing the ships in the water that some of the most valuable information is obtained.

**Søren:** *We get a lot of answers on questions we ask when we build it: things we cannot – we cannot find out .... Why – why did they do it like this? And still we do it exactly like they did it, and even though we can't find the – the answer. But we will find it when we go out sailing with the boat, because it's where it should be, it's where it's built for. And if it's not functioning on the sea, on the big waves, and when you get seasick and all this, then it's maybe because we have reconstructed the ship – the ship in the wrong way.*

Søren Nielsen is head of the boatyard at Roskilde. He was in charge of the Sea Stallion construction project.

The Sea Stallion from Glendalough is the replica ship built from the skeleton of the Skuldelev 2 longboat. Analysis of its timber had revealed that the ship must have been built in Ireland, probably in the vicinity of Dublin, around the year 1042. Reconstructing the ship took over three years.

But, when it was completed, Søren was on the crew when they sailed the ship from Roskilde back to its original home: Dublin. It was an exhilarating and illuminating trip.

*So, sailing the ships, it makes you think about the Viking age; it makes you think about the organization of 60 people on board a ship like this, how to organize these people and how to sail it, how to handle the ship without breaking it. So, it gives you a lot of answers on questions, but – of course – then it gives you a lot of new questions, on a lot of things .... How did they sail around north Scotland, in the Viking age, with 60 hungry people – warriors? And how did they go to Isle of Man, for example, with 60 ships, not only one ship? We have difficulty today, where we have our cell phones and everything, we have a lot of difficulties to – to actually organize this – this trip. But, think about the Viking age, where they came, hundreds of ships: how did they organize that, going into the coast at exactly the same time, be ready to fight, have water enough to be – to be ship-shape and ... it's ... some of these questions you just have to ask yourself when you're sailing there.*

While the structure of the ship was authentic, the Sea Stallion had added modern GPS to ensure the safety of the 65-strong modern-day crew. The journey took more than six weeks, and, when they finally arrived in Dublin, emotions were running high.

*I would say we were crying, mostly, because, when we went in, there was, I don't know, 10,000 people ... a lot of people, and – and Dublin, they think this – now we're coming back with the ship, it belongs to them, and the*

*Sea Stallion, it was just in every Dubliner's heart, I think. They were there, and when we went into the big harbour, the big ships, they start, 'Wooo!' you know, and people were going .... It was a big moment, it was, not because ... I mean, we haven't, like, crossed the North, the North Atlantic or something like that, but it was just – we felt very, very welcome when we went to Dublin.*

In the past few years, another nine ships have been unearthed at Roskilde, and work is ongoing to preserve and reconstruct these ships. And, through this work, we will find out even more about the fascinating Viking civilization and the incredibly skilful shipbuilders that made it all possible.

## Unit 11: Synaesthesia

### Part 1: The senses

Most people know that there are five main senses: sight, hearing, taste, smell, and touch, and all of these senses are important in how we perceive the world. But, what would it be like if you could hear colour or taste sounds?

For some people, this isn't a hypothetical situation. People with synaesthesia experience this crossover of the senses all the time. Synaesthesia is a relatively common, but harmless, neurological condition where people make connections between their senses.

Some synaesthetes – the name given to people with synaesthesia – associate letters or numbers with a specific colour. So, the letter 'A' might be red, or the number '1' might be blue. Others associate colours or shapes with sounds, and some even make connections with their sense of taste. Can you imagine what it's like to experience the world in this way?

**Joshua:** *I think it's very difficult. So, I'm doing philosophy, and there's a famous article called 'What is it like to be a bat?' So, you've got to imagine what it would be like to see in ... see with your ears, essentially. And I think it's very difficult to do that. Maybe you could, although I'd find it very hard to.*

**Julie:** *Extremely busy. It's busy enough when we can just hear with our ears and see with our eyes and so on, so to be able to ... and they're random as far as I'm aware, they're completely random. So, all of a sudden, it'll be a really horrid smell that you associate with something that should be really nice, you know? So, I imagine it would be very, very confusing, and a bit like hearing voices or something like that. You would really have to have a lot of control to be able to concentrate. It would make concentration very difficult, I think.*

**Alex:** *I mean, it's quite hard to describe with words, because it'd be such a sort of sensory phenomenon. I guess it would have advantages in the sense that you could sort of programme your memory to remember things using different cues – so, maybe something as simple as revising for exams, you could use different foods or*

*different smells or senses in a way that you can't with just sort of words and diagrams alone. But, yeah, it's very hard for me to imagine without having it myself.*

Scientists have been aware of the existence of synaesthesia for over 200 years, but for a long time they knew very little about the condition. But, today, they can use neuroimaging to see how our senses stimulate our brain.

The sensory cortex is the part of the brain that deals with the senses.

Different areas of the sensory cortex are stimulated by different senses. Scientists believe that synaesthesia is caused by an unusual amount of connections between these areas.

In the past, synaesthesia was thought to be extremely rare, but today scientists believe between one and four per cent of the population have the condition.

## Part 2: Exploiting synaesthesia

These strange connections between senses all come under the term 'multisensory perception', and this is currently an intriguing area of scientific research.

Professor Charles Spence is the head of the Crossmodal Research Laboratory at Oxford University.

He studies how multisensory perception affects the way we interact with the world, and how this can be exploited.

**Professor Spence:** *I'm an experimental psychologist, working here at Oxford University, and I'm interested in the senses: in hearing, in vision and touch, taste, pain, and how those senses get put together in people's heads. And in this building there's a lot of neuroscience going on, which means we try and understand the rules that connect your eye to your ear, your ear to your nose, your nose to your mouth.*



Professor Spence calls this ‘multisensory stimulation’ or ‘multisensory perception’.

*So, multisensory stimulation, or multisensory perception, refers to the idea that we have five senses, or perhaps more: hearing, vision, touch, taste, and smell. And, most of the time, when we experience the world or products around us, they stimulate most, not all, of the senses.*

He believes we use multisensory perception all the time, when we’re eating a meal or choosing a particular product in the supermarket. It is an important part of our everyday lives.

*So, take a lovely meal: it’s got to taste right; it should have the right aroma or smell; it needs to look visually appealing; the crunch, the sound, should be right, as should the texture, the mouth feel or the fattiness in the mouth. So, all the senses are involved in the perception of food, and that maybe is the most multisensory of our experiences. But, elsewhere, if I think about some sort of packaging or something – say, this bottle here – it’s got a certain weight, so that’s got a tactile perception. It’s got a feel of roughness, so that’s kind of ... it’s also got a sound I can hear, a colour, and it will have a smell. So, all the senses are again being involved in my perception of this product and its packaging. And a lot of the work that we do with companies now is trying to help them enhance the multisensory appeal of what they’re offering.*

Professor Spence’s team are working hard to improve our understanding of multisensory perception. A lot of this research is very useful for food businesses. Today, they are testing how different music can affect the taste of coffee.

*We’re looking at sort of synaesthesia, which is a – this mixing of the senses. People who see coloured numbers or days of the week are the ones you see on television, but we think that maybe we’re all synaesthetes, kind of, so that when we give people in the lab downstairs different tastes, flavours, aromas, and we give them a choice of any instrument, any pitch of sound – just pick an instrument and a high note or a low note that goes with that taste, say it’s a taste of coffee or the smell of chocolate, or of raspberries – it sounds like a bizarre thing to do. And yet, we’ve been doing it for years, and most of our subjects give reliable answers that are very similar to one another. So, most people will say that sweet is high-pitched and probably a piano, whereas bitter tastes are kind of low-pitched and they’re more brassy in nature. And when you find subject after subject who says the same thing, then you can use those insights to try and create soundtracks that synaesthetically match the tastes of food.*

We perceive the world through our senses. Everything we experience, we experience through our sense of touch, taste, smell, sight, or hearing. Therefore, a better understanding of how the senses work – and how they work together – will lead to a better understanding of the world we live in.



## Unit 12: Age is just a number

### Part 1: As old as you feel

Imagine that you had no idea when you were born. Based on how old you feel inside, how old would you say you are?

**Anee:** 27. *[Why?] I don't know. I just ... I know that I think about that quite often. So, that's how I feel.*

**Joshua:** *I feel, I think, as old as I am. So, I'm – I'm approaching 30, and that's how old I feel.*

**Catherine:** *I would like to think that I'm probably about 62. And that's pushing it a bit.*

**Terrina:** *Oh, I mean, I feel 84 but I don't think anyone would believe me if I told them. No, I don't know. Maybe .... I would – I wouldn't be able to answer that. I don't know.*

**Alex:** *I mean, I actually am 21. Maybe more like 25? I don't know.*

**Julie:** *Probably about 30. Just because I remember lots of very good times from then, and that's where I feel I am. I forget I've got grey hair; when I look in the mirror, I'm a bit shocked really.*

**Mie:** *Well, I feel it depends on the day, I guess. Like, it changes over time. But I'll probably say around early 20s.*

Of course, we can't deny the age we are – our chronological age – but the idea of only being 'as old as you feel' may be more than just wishful thinking. Some scientists are very interested in this concept of 'subjective age' and how it affects our health and wellbeing.

Unsurprisingly, researchers have found that the difference between our chronological age and our subjective age changes over our lifetimes. Up to the age of 25, we tend to feel older than we are. Then this switches. By the age of

30, nearly three-quarters of us feel younger than we are. Scientists believe that cultural attitudes and stereotypes around ageing may influence this perception of age.

But our concept of ageing is also changing as life expectancy changes. In 1955, the average life expectancy at birth was under 50 years. Now, it's over 70 years. Experts think that by 2050 there will be more than 2.1 billion people over 60, and 425 million people over 80 years old.

Japan has the highest life expectancy in the world. The Japanese island of Okinawa has more centenarians – people who are 100 years old or more – than anywhere else in the world. What is more, they seem to age more slowly than other people. According to scientists, people who are actually 70 often have the bodies of 50-year-olds.

And what's the Okinawans' secret to living such long, healthy lives? Experts believe it's the combination of eating a healthy diet that includes plenty of fish, vegetables, and seaweed, staying active, and spending lots of time with friends and family.

On Okinawa, people say you are a child until you are 55. And, when you reach 97, there's a special celebration called kajimaya to celebrate the fact that now it is time to be young again. On Okinawa, old age is prized, not feared.

## Part 2: The best age

We all have a different personal experience of age and ageing. In our teenage years, we can't wait to be older: to be able to leave school, to learn to drive. But, by middle age, we might look back fondly on our youth: at the days before we settled down, before we had a job or a mortgage.

What feels like the best age to be is very different for everyone. Is there an age you would be happy to remain at forever?

**Anee:** 27. *It's my ideal age. [Why 27?] I don't know. I just think that I was between a grown-up and a youth, and I had a great time at that point of life. I still feel good, but that was even better. Life wasn't as serious then.*

**Julie:** *Around about the 30s. It was an exciting time for me and my husband. It was before we got married, and we did a lot of travelling around the world. And we had a good time. So, for me, that's an age I quite like.*

**Matt:** *It's gotta be your childhood, hasn't it? I think it really has. I mean, any time I talk about just the time I had when I was a kid at school with all my friends, still going and playing out, before, like, smartphones, before Internet and things like that. It's just always gonna be the best time in your life, I think – isn't it?*

**Mie:** *I would probably say around the early 30s. I haven't reached it yet, but I feel like it's an upward trajectory from there, and you feel a bit more, like .... You're still young enough to – to change what you want from life and you're – and you are at a place where you know enough to figure out what you actually want.*

**Catherine:** *Hmm, yes, well, I'd want to be a bit more energetic, so I might stay at 40. That's a sort of respectable age for climbing mountains and things.*

**Joshua:** *I think I'd pick the age when you've just got young grandchildren. I mean, I see my grandparents: they are just so happy with, you know, new grandchildren coming along. I think at that age as well you've perhaps achieved as much as you want to in your career, and even a career isn't the be-all-and-end-all, in any event.*

While our experience of ageing is unique, there is also an enormous amount of research that's being done into the effect of age on our abilities. While none of the results are definitive, there are some interesting findings, especially when it comes to establishing when we peak at all sorts of different things.

Scientists have found that our ability to learn languages peaks at the age of six or seven. But our vocabulary, even in our own language, doesn't peak until our late 60s. And, when it comes to maths, our arithmetic skills peak at 50.

Our memory generally peaks around the age of 28. But some studies have shown that our memory for names peaks around age 22, while our memory for faces doesn't peak until 32.

And our understanding of other people's emotions doesn't peak until our 40s and 50s.

One of the most interesting findings is about life satisfaction. Studies have shown that that life satisfaction seems to come and go. It first peaks in our early 20s, and then again in our late 60s.

And at what age are people most likely to make big life decisions? Well, any age that ends in a nine, of course!

