

Deep Culture Podcast – Transcript

The Deep Culture Podcast explores the psychological impact of intercultural experiences, informed by the sciences of brain, culture and mind. Join hosts **Joseph Shaules** and **Ishita Ray** as we look at the personal growth that can come from travel, living and working abroad, learning a foreign language, growing up in a multicultural context—and the challenges of bridging different cultural worlds.

Episode 55 – Evolution and Culture

Why do we have weak stomachs and big brains? How is our cognition different from chimpanzees? Join Ishita Ray and Joseph Shaules as they explore how culture has shaped genetic evolution. Millions of years ago, as culture became increasingly key to human survival, a chain reaction of culture-genetic evolution reshaped our body, brain and mind—culture made us human. Based on the work of evolutionary biologist Joseph Henrich.

Time	Speaker	
00:00:01	Ishita	“We are smart, but not because we stand on the shoulders of giants or are giants ourselves. We stand on the shoulders of a very large pyramid of hobbits.”
00:00:23	Joseph	Hello, this is Joseph Shaules, and welcome to the Deep Culture Podcast where we explore culture and the mind. And I am here with Ishita Ray. It is great to be with you today.
00:00:34	Ishita	Hi, Joseph. It's great to be here with you again.
00:00:38	Joseph	Ishita, you know, on this podcast we often say that humans are cultural by nature, which is to say, culture is a deep part of what makes us human.
00:00:49	Ishita	We talk about things like how culture shapes our mind, perceptions, bias.
00:00:55	Joseph	But in this episode, we want to dig even deeper into our cultural nature. We are going to talk about how our brain and body have also been shaped by culture.
00:01:08	Ishita	And you might say: “But wait, our bodies were shaped by evolution over millions of years. That's not cultural.” But

		morphologically speaking, our bodies are a product of genetic evolution that has been driven by culture.
00:01:27	Joseph	And we should explain that we're talking about this because we got totally hooked on a book by Joseph Henrich called <i>The Secret of Our Success</i> . And the things we're talking about today come mostly from there.
00:01:40	Ishita	So, we decided that today we'll have a conversation about what we've been learning. And Henrich, by the way, is an evolutionary biologist at Harvard. And this book talks about the idea that culture is the secret of our success, success as human beings.
00:02:00	Joseph	Now, I'm used to looking at culture as how people act, what's in their minds, customs and values, that kind of thing. And I kind of just take for granted that people are cultural. But Henrich is talking from the evolutionary perspective. He traces the cultural nature of human beings back in time
00:02:23	Ishita	We human beings, we started out as small-brained primates without culture, but at some point, we became cultural because it had survival value. The question is, when and how did this happen?
00:02:39	Joseph	Another way to say it is that culture made us human. And the story that Henrich tells, the evidence he presents, got us looking at culture in a new way. And it's an even deeper part of our human nature than I had realized.
00:02:54	Ishita	And all the stuff that we'll talk about, it's kind of geeky, like selective evolutionary pressure, autocatalytic cultural evolution, causal opacity. Oh, and cassava and cyanide. But it's all really cool stuff.
00:03:12	Joseph	Which brings us to part one - When did culture start?
Part One – When did culture start?		
00:03:14	Joseph	So, Ishita, let's start with this idea that humans are cultural by nature. And Henrich argues that culture isn't something that started recently with, for example, cave paintings 40,000 years ago, or symbolic thinking or language.

00:03:43	Ishita	Henrich is telling a story that started millions of years ago.
00:03:47	Joseph	And his basic argument is that cultural learning has affected genetic evolution. That culture has shaped our bodies, our brains, and in the end, our minds. And that's everything from the size of our gut, the dexterity of our hands, the length of our childhood, slow twitch muscles, the development of social prestige, the ability to digest milk, all kinds of things.
00:04:13	Ishita	And people have the tendency to see culture and evolution as different things. When I hear the word 'evolution', I think of Charles Darwin; survival of the fittest; genes that lead to reproductive success, get passed on.
00:04:29	Joseph	So, a bird that digs for worms with a longer beak will get more worms, have more offspring, and over time, the beaks will get longer and longer. But that process typically takes millions of years. So it can seem very different from culture.
00:04:46	Ishita	But Henrich is saying that it's not so separate. Here's a quote: "We often treat cultural differences as if they were non biological and non-material, almost otherworldly. This confusion emerges when people think that showing something is in the brain or driven by hormones means it's genetic. This is not the case."
00:05:14	Joseph	And this interconnection between culture and genetics is the main point of his book. But before we get into that, let's start with the most basic question: what is culture?
00:05:26	Ishita	And Henrich is talking about culture as: "learned behavior passed on from generation to generation".
00:05:34	Joseph	And by that definition, some animals have a bit of culture. Chimpanzee troops use different types of tools. Sperm whales use different dialects. And there are birds that pass their songs down to their young.
00:05:48	Ishita	But it's only in humans that culture basically took over the species.

00:05:55	Joseph	And I just hadn't given much thought to how that happened. You know, how did we get from sitting in the forest, eating leaves, to making stone tools, mastering fire, burying the dead, to language, to steam engines, to YouTube?
00:06:19	Ishita	Henrich tells us stories of the different ways that cultural learning made humans successful.
00:06:27	Joseph	And we have been successful. Way before modern technology, we had spread over the planet. We were causing mass extinctions, we were thriving in radically different environments - desert, forest, jungle. There's a great chapter in the book about Western explorers who got lost or stranded, for example, in the Arctic, but they couldn't survive. Like they couldn't figure out how to hunt seals.
00:06:51	Ishita	Yes, and I loved learning about that. It's not easy. Seals escape under sea ice. If you approach to hunt them, you have to look for their breathing holes by reading the sea ice, wait for hours, time your spear thrust. And even if you get the seal, you have to skin it, render the blubber, sew clothes from it.
00:07:16	Joseph	And Henrich goes into these details because so called primitive societies build up an enormous body of cultural knowledge, more than any single individual could learn.
00:07:27	Ishita	And, that's not to speak of modern societies. The collective knowledge in a computer or a jet plane.
00:07:33	Joseph	Or, even a simpler example. I could not make a pencil, even with tools. Like, which tree would I use? How do I cut it down, how do I shape it? And anyway, what exactly is graphite?
00:07:49	Ishita	It's a form of carbon. But that is exactly Henrich's point. You don't need to know that to use a pencil. Individual knowledge is limited, but cultural knowledge accumulates and has this multiplier effect.
00:08:05	Joseph	So, that leaves us with two kinds of evolution. Genetic evolution happening slowly over thousands of generations, and cultural evolution over only a few generations.

00:08:16	Ishita	And I always thought about those as largely separate processes: one fast, the other slow. But Henrich is saying that they cannot be separated, that culture has been a key driver of genetic evolution.
00:08:32	Joseph	And let's put that in geeky terms. We would say that the selective pressure of culture drives the genetic change that leads to more culture in a kind of self-reinforcing cycle.
00:08:46	Ishita	Let's be more concrete. Let's go back to a time when humans had very little culture before cultural evolution and pick up the story from there.
00:09:16	Joseph	So we've traveled back about 5 million years, when chimpanzees and humans had the same ancestors. And things were changing - the world was cooling, there was a decline in volcanic activity, less CO2 in the atmosphere, the opposite of global warming.
00:09:36	Ishita	And lower temperatures meant fewer jungles, more grasslands and woodlands. And that put evolutionary pressure on our ancestors, who until that time had been living in the trees.
00:09:50	Joseph	And life out in the open is dangerous. At the time, the predators were huge, bigger than today. Saber toothed cats, hyenas the size of bears. And there were lots of them.
00:10:16	Ishita	Henrich points out how wimpy our ancestors were back then. They couldn't really run, ate mostly plants. Something like 10% of them were killed by predators. There are fossil skulls with puncture wounds from saber tooth cats.
00:10:35	Joseph	So with those evolutionary pressures over time, our ancestors lost the ability to climb trees. They started walking on two legs. This took something like 2 million years.
00:10:46	Ishita	And we don't know exactly how this happened. But at some point, humans learned to collaborate based on shared knowledge. Culture became a key to survival.
00:10:58	Joseph	But what does that mean? Let's compare the skills early humans needed to survive with chimpanzees.

00:11:17	Ishita	And for sure, chimpanzees are amazing animals. They have complex communication, both vocalizations and gestures, complex social relations. And they do have some culture. They use tools like twigs to catch termites.
00:11:34	Joseph	But what chimps don't do is cooperate. You won't see two chimps work together to move a heavy object. They don't take different roles, "Okay, you do this and I'll do that". And they don't improve on what they learn, so their culture doesn't evolve.
00:11:51	Ishita	Also, basically, chimpanzees are selfish. Their sharing is based on dominance. You won't see chimpanzees handing out sticks to defend the group.
00:12:02	Joseph	And that shift is a key turning point in our story. Early hominids learned to collaborate. If we're out foraging and a saber-toothed cat threatens us, is it: "Forget you guys, I'm out of here", or do we stand our ground as a group? Maybe with sticks or stones as weapons? And collaborating and accumulating knowledge led to better group survival.
00:12:28	Ishita	I think I had a bias thinking that early humans did not require much cultural knowledge. You know, like anyone can make a stone tool. But even at these earlier stages, learning from others is key. What kind of stone do you need to make a blade? Where do you find it? How do you strike it?
00:12:49	Joseph	And I wasn't thinking of how simple skills combine to form complex skills. Let's say that one member of a group learns to use a stick to spear small game in their burrows. And another learns that by following tracks, you can find where animals come from. And another finds a way to flake off stones to make especially sharp edges.
00:13:13	Ishita	But when these three skills are passed on to the next generation, hunting rabbits becomes a skill that you learn as a single thing. You take the individual skills for granted and you work on improving this more complex skill.
00:13:30	Joseph	So knowledge gets increasingly complex over time. And we see that in traditional societies, for example, with highly skilled

		hunting techniques, such as making poison darts, which involves an incredibly complex sequence of steps.
00:13:48	Ishita	So let's recap. Cumulative cultural evolution happens as shared knowledge develops in complexity. And this brings us back to cultural learning driving genetic evolution. By 2 million years ago, our bodies, our brains, our minds were already being shaped by culture.
00:14:11	Joseph	And that brings us to part two – Hand, guts and brains.
Part Two – Hands, guts and brains		
00:14:29	Ishita	Okay, so let's pick up our story about 2 million years ago to the time of Homo Erectus.
00:14:36	Joseph	So picture a primate, similar height to us, walking and running like you and me. But they didn't look, quote unquote, modern. They had a sloping forehead and a big jaw, thick skull and a heavy brow.
00:14:52	Ishita	Even at this point, though, their body had already been shaped by culture. They stood upright. Their hands were more dexterous, which implies using and carrying around tools. Their shoulders were better adapted to throwing, which chimpanzees are not good at.
00:15:12	Joseph	Still, those changes took a long time. But Henrich argues that around 2 million years ago, things started to really accelerate. Culture not only affected genetic evolution, it became a primary driver of evolution.
00:15:26	Ishita	And again, the geeky way to say this is that culture's influence on genetic evolution became autocatalytic. In other words, the process reinforces itself. That's because when culture becomes essential for our survival, there will be selection pressures on the genes that allow for cultural learning.
00:15:49	Joseph	In effect, genetic evolution will make us more cultural. It will favor individuals who can, for example, remember things, communicate well, teach others, pay attention to the most skilled individuals, organize information, and this creates a kind of cultural, genetic arms race. And this whole idea was really new for me.

00:16:11	Ishita	So, let's think about this from the perspective of Homo Erectus, let's say 1 million years ago. And Homo Erectus may not have been modern by our standards, but it was a remarkably successful species.
00:16:26	Joseph	They spread out of Africa, all over the world. Remains have been found in India, Pakistan, Indonesia, China. You may have heard of Peking man or Java Man. They were also in Europe, Spain, Italy, and they survived for 2 million years. Over that time, their brains got bigger and their tools got better.
00:16:49	Ishita	And our species, Homo Sapiens, diverged from Homo Erectus about 1 million years ago. And cultural evolution drove genetic change for both. For example, both Homo Erectus and humans have bodies that evolved to run long distances in the heat. Longer legs, shorter arms, arched feet, the achilleas tendon, a lean body with less hair, sweat glands.
00:17:20	Joseph	And all of that allowed foraging in a much larger area. And it made persistence hunting possible. Basically tracking and chasing an individual animal over a long distance, forcing them to sprint over and over until they're exhausted. Basically, humans are good at running.
00:17:36	Ishita	Even now, people run marathons for fun. Only a few animals can run distances like that. But there's something odd. Humans are extremely fit for running, except for one thing. And you notice it when you watch a marathon. There are always drink stations for the runners to grab water.
00:17:57	Joseph	And that's because humans are terrible at storing and consuming water. Horses can drink 30 to 50 liters of water and Camels can drink a 100. Humans can barely drink one liter. And we lose it when we sweat. So we evolved all of these other adaptations for long distance running, but not the ability to store water. Why is that?
00:18:28	Ishita	Because, and maybe you have guessed this already, our early ancestors got good at finding water, which is often not easy and

		something we need to learn. And also to use objects to carry water. Things like ostrich shells, gourds, or animal bladders.
00:18:49	Joseph	I just love this image of our ancestors running along drinking from an animal bladder. Anyway, the adaptations for long distance running depended on the cultural learning necessary to find and carry water.
00:19:05	Ishita	And that means that genetic evolution favored the humans who could best share information and skills like that. So cultural and genetic evolution reinforced each other.
00:19:19	Joseph	And Henrich gives other examples of this feedback loop. Our bodies evolve to run, but also to throw. Our shoulders rotate in the way they do because we've been learning to protect ourselves and hunt by throwing things. And we've had to make objects to throw, like spears.
00:19:37	Ishita	And humans have great hands. Joseph, you play the piano, use chopsticks. Other primates don't have that dexterity.
00:19:47	Joseph	Well, I was really interested to learn how weak human stomachs are compared to other primates. We cannot handle much raw meat. We don't have the ability to break down cellulose in plants, like, try chewing on some leaves. And that's because we lost the enzyme capacity to ferment plant matter in our gut. Also our jaw muscles became weak. Chimpanzees spend six hours a day chewing.
00:20:15	Ishita	And these changes evolved because of culture, like controlled use of fire, food processing techniques. We pound, we boil, we roast, and we don't do that because our stomachs are weak. It's the opposite: our stomachs became weak because we started processing our food. We basically outsourced digestion.
00:20:40	Joseph	So we shrink the gut and grow the brain.
00:20:44	Ishita	And speaking of food, let's talk about cassava.
00:20:49	Joseph	Well, I didn't know much about cassava except that tapioca is made of it. But I learned that it's a root crop. It originated in South

		America, then in the 16th century, it spread to Africa, Asia, the Caribbean, and it's still a staple.
00:21:06	Ishita	It's an amazing food. It has lots of calories, it grows in poor soil, it's drought tolerant. You can leave it in the ground and it doesn't spoil. It's very versatile. You can make flour, fufu, cassava chips, even alcoholic beverages.
00:21:25	Joseph	But there's a huge issue with cassava. If you try to eat it straight out of the ground, it's toxic, it contains cyanide. It will poison you.
00:21:44	Ishita	And can we take a tiny detour here? Lots of plants have toxins in them to protect themselves from being eaten. We have this image of so-called healthy natural foods, but that's because we shop in supermarkets. Plants in the wild, a lot of time, you simply cannot eat them. The leaves of potato plants have solanine, which is a poison. Apple seeds have cyanide in them. Rhubarb leaves have oxalic acid. It will make you sick. So it's not strange that cassava is really toxic in its natural state.
00:22:22	Joseph	And Henrich brings all this up because removing the cyanide is a very involved process with many steps that aren't obvious.
00:22:31	Ishita	And bear with me here. First, you need to peel off the skin. That reduces the cyanide and makes it less bitter. But then, you need to soak it to ferment it from one to three days. That breaks down some of the poisonous compounds. Then, you need to grate it to increase the surface area, then press the liquid out of it. And then there's a final drying or cooking. It could be boiling, roasting, or baking, which you need to get rid of the last bits of cyanide.
00:23:08	Joseph	So, when I hear all of that, I think, how did early humans even start eating cassava? First of all, it's bitter, so eating it would not be appealing. And if some adventurous person did, they would get sick and maybe die.
00:23:22	Ishita	But, okay, you could get curious and try taking the skin off and soaking it, which takes away the bitterness, and you can eat it. And you've removed a lot of toxin, but there is still trace amounts of cyanide that build up in your system over a period of years. It slowly poisons you, it can cause paralysis.

00:23:45	Joseph	But you can eat it for a long time without noticing these effects. So how would people know that the way you prepare cassava is the problem?
00:23:57	Ishita	And this was new to me, how complex skills can develop over generations by accident and experimentation, even without people intending it. But once it is established, the group benefits overall.
00:24:14	Joseph	Well, I was fascinated by the idea that these customs can be very valuable without people knowing why. Again, the geeky term is causal opacity, and it means two things. One, that collective knowledge can be more powerful than individual knowledge, and that it's often not individual problem solving that gets humans ahead.
00:24:36	Ishita	Another example that's close to home for me, is the use of chili peppers in cooking, something you see in India and in many tropical regions. Chili peppers have an antimicrobial effect, which is valuable in tropical regions where there is so much bacteria in the environment.
00:24:55	Joseph	But the people who started using chilies didn't necessarily understand these microbial effects. It's simply that cultures that developed chili eating customs end up being healthier. And so cultural learning wins out.
00:25:11	Ishita	Again, it's not individual cleverness that's getting us ahead. It's group level intelligence.
00:25:17	Joseph	And that brings us to part three – Why is our brain big?
Part Three – Why is our brain big?		
00:25:25	Joseph	So, Ishita, I think that if you ask people: what is the most important difference between animals and humans, they will often say: “Well, humans have a big brain.”
00:25:43	Ishita	Which is true. Our brain is about four times as big as chimpanzees. We have a particularly large neocortex. But I love this research that compared the cognitive abilities of apes and human children.

00:26:03	Joseph	So they tested things like selecting the right tool to solve a problem, a test of causality, or the ability to recall the location of an object, spatial reasoning, or to assess the amount of something. And finally, in social learning, the subject observes a demonstration of how to do something and then they have to do it themselves.
00:26:24	Ishita	And if our brain is special because it helps us solve problems, you'd think we'd be better than apes in all these areas.
00:26:32	Joseph	But no. In fact, the only area where a toddler scores higher than apes is in social learning. No comparison. Humans score near 100% and apes near zero. A child will carefully observe what someone does and copy the same steps, whereas apes simply aren't oriented towards learning from observing behavior, at least not the way that humans do.
00:26:57	Ishita	In a test of working memory, chimpanzees were trained to tap numbers on a touch screen in the right. And when the numbers were visible for a relatively long time, humans often did better than chimps. But when things sped up, the chimps beat all of the human subjects.
00:27:18	Joseph	Well, I love looking at this research because we think that being smart relates to having a quick mind and knowing that A causes B. But Henrich's argument is that is not what has made humans successful. It's our ability to learn from others, to pay attention to those who know and to copy them exactly.
00:27:38	Ishita	Yeah, that's one thing that did not make sense to me at first. In those tests, toddlers tend to copy every step that the demonstrator did, even if those steps weren't necessary. The chimpanzees left out those steps, which seems to me like chimps were being more efficient.
00:27:59	Joseph	And this brings us back actually to cassava. If we remember all of the steps to processing cassava, the later ones can seem unnecessary if you only pay attention to getting rid of the bitterness. But cultures that eat cassava include those steps, even if no one knows exactly why.

00:28:18	Ishita	So genetic evolution favoured learning during an extended childhood of copying more than questioning. It also favoured humans who paid attention to the right people, people with prestige.
00:28:39	Joseph	And that's another difference between apes and humans. Ape societies are based on dominance, on power, which also exists in human societies. But humans also have prestige, meaning those people who we pay special attention to.
00:28:54	Ishita	And these are different things. We may do what we are told because we are afraid of someone, they dominate us. But we also follow people's example because we admire them. So people copy the fashion of their favorite actor, and this is largely unconscious, right?
00:29:14	Joseph	I remember when the actress Angelina Jolie had a double mastectomy because of a cancer gene, and suddenly there was a flood of women getting cancer screenings. I've seen it called the Angelina Effect.
00:29:26	Ishita	Well, advertisers know all this. They have famous people sell us stuff like an Indian cricketer being the spokesperson for a cement company.
00:29:37	Joseph	Well, we are easily influenced by people we admire. It's sometimes called the halo effect. We think someone who is beautiful is also smart. On social media, we literally call people influencers. And subscribers are literally called followers.
00:29:55	Ishita	But this is a problem, right? We are talking of collective intelligence. But today advertisers and algorithms have hacked our evolutionary psychology. Prestige comes from getting attention on Instagram. It's divorced from real world skills.
00:30:15	Joseph	And there's a similar issue with fast food. In nature, sweet or fatty food is rare and calorie dense. Also, salt is an important nutrient. But the result is that today we end up craving pizza or a burger and fries.

00:30:31	Ishita	But to get back to prestige, it can lead to collective intelligence. Let's take the cassava example. Those that added the extra steps were healthier, lived longer, earned prestige, and cumulative cultural learning involved this same kind of blind copying.
00:30:52	Joseph	So let's get this straight. Henrich's idea is that cultural learning led to the evolution of a bigger brain, which is the opposite of the way that I was thinking about it.
00:31:04	Ishita	At the end of the book, there's a chart that summarizes the evidence for that - social learning leading to more tool use, leading to more dexterous hand and more food processing through butchering, leading to smaller teeth and guts, learning to throw, leading to more flexible shoulders. And he talks about things we haven't touched upon at all, like the development of language and abstract thinking and the ability to digest milk.
00:31:35	Joseph	We also haven't talked about the explosion of symbolic culture that started around 40,000 years ago, when suddenly we find symbolism, art and jewelry, complex social structures, trade networks, burial rituals, and from there a kind of cultural arms race. From 5 to 10,000 years ago, civilizations form the Industrial Revolution, the Information Age. It's cultural evolution on steroids.
00:32:04	Ishita	So, Joseph, what are you taking away from all of this?
00:32:09	Joseph	I guess first of all, my ignorance. This book has 50 pages of citations and touches on areas of knowledge that are very technical and interrelated. Physical anthropology, genetics, neuroscience, evolutionary psychology. I mean, this episode was really hard to do. But the other thing that I take away is that in the end we human beings really don't understand ourselves that well. So Ishita, what are your takeaways?
00:32:39	Ishita	Well, that's also something else which we don't have time to talk about. We are a species that evolved through cultural competition. But there are a lot of biases and violent tendencies

		that come along with it. There was a lot of warfare among hunter gatherer societies and prejudice can be passed on unthinkingly.
00:33:03	Joseph	Communities can be highly successful but also create great suffering. Individuals don't necessarily benefit from so-called collective intelligence. So where does all of this leave us?
00:33:16	Ishita	Well, we are intercultural educators and what we are trying to do, that is encourage intercultural understanding, is not easy and we overestimate how smart we are. And I love this quote from the book: "We are smart, but not because we stand on the shoulders of giants or are giants ourselves. We stand on the shoulders of a very large pyramid of hobbits."
00:33:46	Joseph	I love that. And I think that's about all we hobbits can handle today. So let's talk about sources. Obviously, we drew heavily on the <i>Secret of Our Success</i> by Joseph Henrich, but there are big caveats. We are talking about what impressed us about this book, but we are not evolutionary biologists and this episode does not go into the debates about these questions. One critique we found is that Henrich doesn't bring up criticism of group selection, which is part of his argument and is a hotly debated topic among evolutionary biologists. To learn more about these debates, look up dual inheritance theory or gene-culture coevolution. The Deep Culture Podcast is sponsored by the Japan Intercultural Institute, an NPO dedicated to intercultural education and research. I am the director of JII. This podcast is noncommercial, no advertisements, nobody gets paid. So please support us by writing a review on Apple Podcasts, by sharing it on social media, joining the Japan Intercultural Institute and you can also write us at dcpodcast@japanintercultural.org .
00:35:00	Ishita	And thanks to the entire podcast team for all their input on this episode. Sanne Bosma, Emre Seven, Torhild Liane Harr Skarnes, our sound engineer Robinson Fritz, Ikumi Fritz and everyone at JII. And thanks to you, Joseph, for exploring this cool stuff with me.
00:35:23	Joseph	Well, I really had fun geeking out with you.