Audio file

[5\_Nutrional Anthropology by Stanley Ulijaszek 1.mp3](https://unioxfordnexus-my.sharepoint.com/personal/admn5769_ox_ac_uk/Documents/Transcribed%20Files/5_Nutrional%20Anthropology%20by%20Stanley%20Ulijaszek%201.mp3)

Transcript

Hello. Hello, hello.

Welcome to the Oxford and the Property podcast.

You're listening, you're listening. Altered anthropology monitors anthropology podcast.

My name is Jacob Evans and I am an Enfield student at the School of Anthropology and Museum ethnography here at the University of Oxford. Today I have the privilege of introducing the speaker for the Oxford Anthropology podcast, Doctor Stanley Lee. Jasik Stanley is a nutritional anthropologist and an emeritus professor of human ecology at the University of Oxford. Stanley's work centres around the evolutionary basis for and cultural diversity in nutritional health. This includes both under nutrition and obesity, and the diseases associated with them in the seminar, we had the opportunity to listen to Stanley's Joffrey Harrison Prize lecture from 2022, titled Nutritional Anthropology. The presentation focuses on aspects of nutritional anthropology that engage with the work of Joffrey. Person, primarily human, dietary evolution, dietary flexibility, and prison day under nutrition and infection. Stanley demonstrates the multidisciplinary nature of nutritional anthropology, with diverse methods ranging from ethnography, historical and archaeological to nutritional, epidemiological and anatomical, to confront major issues that are changing human and social relationships with disease. Enjoy.

So the focus of this talk, well, I'm going to give an overview, then I'm going to talk about evolution, diet and nutrition and then. Dietary and nutritional flexibility and then offer some thoughts on present day present day being the last 20-30 years I guess of under and over nutrition. So the timeline is probably from 2,000,000 years ago to the present day within 15 minutes or so. Yeah, we'll do what we can do. So as an overview, we know in anthropology it's very important to respect the ancestors and I feel. But I'm respecting an ancestor by speaking here today in nutritional anthropology. I think the important ancestors, uh, that I'd pay homage to are Audrey Richards and perhaps in a way that is less known about Margaret Mead, Margaret Mead. Why so? Well, Audrey Richards wrote this amazing tract. On studies of hunger, land use and diet, and then Northern Rhodesia at a time when people were talking about under nutrition in the context of colonialism. Uhm, not yet Decolonized uh, Northern Rhodesia. She was already looking at these ecologies of the relationships between hunger, how people were using the land. And how colonial systems were changing that that land use already in the in the 1930s, seminal work, I've read this, first of all in the 1980s and it's a riveting read to the present day. And then Margaret Mead. UM. In 1943, she published a work on food habits, dietary patterns and nutritional health, which has been seminal for. Studies of diet, subsistence and nutritional health more generally set kind of set the set the tone for the future, and then another tone setting work of hers was in relation to uh, political, economic inequalities and food availability and nutritional health these this discourse. About political economic inequalities, nutritional health is now just common parlance. It's everywhere. But she was among the first to give this a proper, proper space. So from Richards to Mead, the field developed diverse, diversified in its interest, became a broad church. UM, in respect to ecological relationships, studies of environment, ecology and food are present day as passed the the importance of food nutrition on society, food, human evolution, and biological adaptation. This continues as a threat. And then. The study of undernutrition and obesity, as integrated by cultural issues, that's a fairly uh, much more recent one as dual burdens of undernutrition and overnutrition have emerged in many, many countries in the last two decades or so, and actually most recently in relation to the COVID-19 pandemic, which I'll come on to presently. And then there's, you know, contemporary problems, food security, infant feeding, food, the body, and personhood, uh food systems. The drivers of dietary change, social, political, economic. And the idea of nutritional health, however you might want to construct that, and in that context, issues of globalisation. Of migration, of inequality, of insecurity, or interrelated in a complex bundle of of, of cause and effect, which is one of the things that has also happened across this time. The world has gotten complex and the study of the world has embraced complexity. More and on. So what is it? Nutritional anthropology. How can it be defined? How can a critical thinker consider this particular field? Well, it's a branch of anthropology that considers the process and science of biological uses of food so stressing the biology. Seeking to understand biological and cultural variability, I've struggled with this idea of cultural variability because of course we know it's much more, much more complex than cultural variability and counting traits and so on. Frank Johnston wrote that in 1987, and someone, someone who was a. A colleague and mentor wrote an an encyclopaedia with him as well as Mike Price and the frustration with that book took me to talk with Simon Strickland to write something we thought could be better. If something irritates you, do something better. I think that's that's probably. You know, I I'd say that's a a piece of advice I would suggest for younger people. Don't just knock something down. Knock it down and replace it with something, but nothing to replace it with. It's probably not worth. Knocking down yet so. So then we defined it as a study of human diet and nutrition in comparative and evolutionary perspective. So present day comparing different groups and populations, but also looking at the time depth how. Does humanity cope with the challenges of getting enough food, getting the right kind of food, and being able to use that to good purpose? And then finally, people's relationships with food and ecological context and the issue with ecological context, is that ecology itself is changing. And so we have to think in more diverse ways in relation to ecology. Now you've all picked this up already that people don't actually eat nutrients. Uh people eat food. I do not. I went to college today and I did not look at the nutritional value of what was available. I just said I love the catsup fish and I went for the cat soup fish. Uh, just come back from Japan and they said to me this is like English fish and chips. Cats eat fish Curry, so I guess so much more fried food being eaten in Japan. Then I'll I'll buy that. I had Japanese fish and chips this the equivalent of for lunchtime people eat food, not nutrients. Or do they? I saw this at Heathrow Airport, a machine standing there with you know what, the people who are truly in a hurry really do not have time to eat and do not have time to think about food. What they should be eating just grab some fuel and get on that plane and shove it down you OK? Now, of course we know that Huell may give you a nutritionally complete diet of, in this case, Mexican chilli. Just pull it out, grip it open or banana shake, vanilla shake a Berry shake or a chocolate shake and you know you can get your nutrition great. If you're a a wired Silicon Valley kind of person who doesn't have time to move away from their machine, in fact, are so tied to their machine, they are hybrid. But what do you miss with thinking about food food as fuel? Well, it takes to the problem of nutritionism and the issue of nutritionism and the idea of fake foods and something that is all too common in the world now. Ultra processed foods in the last. 15 years. There's been quite a lot of discussion about Ultra processed foods and we know what they are. There's not anybody got any ultra processed food and can you show me if you have it there right now someone put in the air. Anyone. Nobody. Gosh, you're such good people. You probably really are. You probably far better than me. No, I don't have a snack bar on me. Sorry. It's reducing food to nutrients and the problems with that are that, uh, you lose so much else that is associated with food, its origins nutritionism. I would put back to 1899 to a an employee. Researcher at the US Department of Agriculture. I was an alumnus of Westland College who wrote about the calorie equivalents of macronutrients, was a macronutrient. If you see it, uh, the macronutrient is carbohydrate. Macronutrient is protein. A macronutrient is fat, and they are all. They all contained calories. What he did was workout how many calories were in each of these. No big deal, but actually very big deal because he could say that 4 calories in a gramme of. Protein 4 calories in a gramme of carbohydrate 9 calories in a gramme of fat. Suddenly you have a common currency for thinking about food which is persistent to the present day and it takes us to this kind of caloric reductionism that we can reduce everything to calories. And say, do people get enough food? Well, they get enough calories. That must be it. They get enough food and much of thinking about, uh, global food security, for example, is in relation to calories and actually. You know, if you get enough calories, that might not be right, because if you get all your calories from certain kinds of ultra processed foods, you won't get the other micronutrients. You're just left with. You know, you're getting the calories, not everything else because the nature of food since 1899 has changed so dramatically, especially recently. And the issue of ultra. Process food is a. Very prescient and important one. On Monday I was at a workshop which was in relation to Kellogg's versus the Crown. That is the British Government. They were challenging legislation that was making breakfast cereal unhealthy. Because that would affect their sales and it would also affect their enjoyment of property. That's part of the case. Now, in the olden days, enjoyment of property meant I have a house and nobody's gonna mess with how I enjoy where I live. But in this case they were talking about intellectual property, so intellectual property, the right to enjoy their intellectual property, which means the right to profit from their intellectual property. So. The first round he got, he got pushed out. Uh uh, and now they are challenging the challenging the case, but The thing is that. If these cases win and then we are talking about unhealthy foods, these ultra processed foods, it is going to change the way that we think about food and what is what is available to in the stores and so on. And we may hopefully look back on this era of Ultra processed foods as being an aberration. Very, very important. Reducing everything to calories has been used to set standards for population consumption, regulating state level, food production, relating nutrition to health and disease, regulating global food security. As I've already said, but also self regulation. Has anybody ever done any calorie counting of their own? OK, so I see 2 willing victims of three willing 4567. The truth is coming out eight. Nine, OK. At least nine victims of nutritionism here. You know you're responding to a structure that was intended for regulating. Things at a larger scale and ended up being, you know, something that is used for self regulation. So Michael Pollan, whom I have met in Pollenzo in Italy. Wrote a wonderful thing about nutrition and this and they said it's a kind of American ideology of food in which we don't actually see foods anymore. We see nutrients, we see calories. You don't need to know what an antioxidant is to eat. Well, you know, you don't need to know about the nutrition to eat. Well, they're, you know, you know how to eat. Well, if you follow certain traditions of eating and when we throw these things away with nutritionism, we are in in instigating a revolution in food which is not necessarily a good thing, not necessarily doing the things you you want it to do. OK. The crimes of Nutritionism have mentioned Kellogg's. And also processed foods. I called fake foods so vitamin Donuts each doughnut is fortified with a minimum of 25 units of vitamin B1. How many units of vitamin B1 did they need to destroy in making that doughnut? Is the first question Kellogg's Cornflakes is also fortified with vitamins and iron? How much nutrient nutrition did they need to destroy in order to need to fortify it so these things have become selling points are really patch ups for industrial process processes? I've got a friend and colleague, Esther Gonzalez Padilla, who's at Lund University in Sweden. She came to work with me here last year and she said something very interesting which I which I thought was which I'm happy to share with you, which she said was my food. Well, I get my industrial food from M&S. And I get my real food in the corner store and however they brand it, M&S, Waitrose, Asda, Leedle and so on. Most of what they're selling is industrial food, and once you get that in your head, do you think, well, actually, what kinds of processes am I supporting through consuming the kinds of foods that I consume? You might say it's a middle class problem, but it need not be OK. Evolutionary ecological concerns in nutritional anthropology involve understanding evolution of human diet through a nutritional lens. As far as you can do that, there are of course problems with trying to understand evolution of human diet when what you have is bones and stones, you really struggle to be able to turn that into nutrition. Believe me, people have done that. And also how anthropology can help understanding human eating? Now let's think about, you know, how we have evolved and what is it we are able to eat and how should we be eating now. I did a podcast many years ago called what's the natural human diet. It became the best selling podcast. I have ever done in my life because people. Just wanting to know well what should I be eating? I mean, it was an inconsequential podcast in the end, cause that's actually it can be absolutely anything because because of the claims that are made about foods here, right, left and centre. But people want to know what should I be eating. We can look at. Diet and nutrition and phenotypic. Flex, flexibility, physiological, morphological across the life course in relation to nutritional health and survivorship. So using life history theory to look at the the human life course and how that relates to the way that we obtain food and use it. And then finally understanding. Ecologies of present day under nutrition and obesity. So moving to the second part of. The talk welcome. I'll be very short about this because I'm sure most of you know all this material, but I'm going to focus on a few saving points, which is how do we become. The species that is able to consume an extraordinarily diverse diet. UM doesn't happen by accident, or does it? Well, maybe to some extent it happens as a consequence of a set of structural forces that you cannot resist, like climate change. And in this context, the climate change we're talking about is the climate change. 1.5 million years ago to closer to the present time, you know when the rainforest started to become depleted. As temperatures rose and we got a much. More patchwork ecology across Africa. So you think about hominids in the African Savannah, you know, in East Africa. Much of where people live is in the rainforest now. If our hominin, I would love to live in the rainforest. I'd be up in the trees picking fruit. I'd be down on the ground. I'd be. You know that that they'd be paradise. Could work out how to to live in in the rainforest. Great thing about rainforests is they are stable. Comparatively stable there is, you know, once you work out your everyday life in terms of getting your food, things are comparatively stable. You can move around and expect to find similar things in similar places. What happens when the ecosystem degrades and breaks down? Into semi desert, into grassland Savannah, scrub as well as some rainforest is that you suddenly? Create new problems. You can't just be a normative hominin in the rainforest. You have to become a hominid with some smarts. Uh, because the opportunities are there, but you have to know how to find them and you have to respond to, well, what the rainforest is if you. Break down a woodland and break it down in size. Its edge becomes a lot big. Yeah. So just think in terms of volumes and edges, the edges get bigger, areas may be declined, but edges become a lot bigger. So places where people can forage effectively are on the edge of one place in another. So if you're the sort of common in that is able to find opportunities, find new niches. Then you'd be in a good place, and I think you know parts of our existence has relied on the smarts of hominins in the past to be able to do that, to be able to find new niches, to be able to find new ways of doing things, and to be able to move. Across across different different ecosystems. The kind of evidence that I've said is sparse compared to extent species. I can't go. And find myself Ohh Homola erectus in white and woods and go and just watch what they do. Hang out with the home erectus. White and woods. See what they do right now I can't do. Attractive that that idea might be with bones and stones, let's say with stones inference from anatomy. We have just a small number of things that give us clues as to what hominins ate, so these light green guys all share similar things. So Homer Sapiens, Homer rectus Homer, Augusta, forget the names. Sapiens is us. Large brain small teeth obligate by beetle bipedalism that is walk on two legs like me. Uh, a large brain. I think a large brain, I don't know if it's useful, but it's big UM and small teeth relative to other primate species distinct from everything else. This gives us clues, large brain. Can be smart. Small teeth means that we're not relying on any particular kind of food. We become in generalists so we can consume different things obligate bipedalism. We walk on two legs. We can go a lot further on two legs than we could if we were clambering like like other hominids. So that's a clue. So the breakdown of these ecosystems has resulted in more terrestrial city. We need to be more on the ground than up in the trees. If those trees are, you know, don't provide enough food, then you have to find and take a risk. Go down on the ground and and and see what you can find. Be able to walk on 2 feet. Having a large brain and a mid sized body for a mammal is associated with the greater home range and go further. Increased dietary energy capture and intake. High, sweet and bitter taste sensitivity. I'll talk a bit more about this later, but that is uhm, the larger a mammal is, the more sensitive they are to sweetness, but bitter taste sensitivity stays the same. This is about your taste, so you reject a lot of foods that are are are are. Potentially dangerous, but you can find sweetness in something like a. Obviously. So one of the reasons you I assume many of you will like lettuce, I do. I love lettuce like lettuce, it's because there's a residual sweetness to it that you probably can't really detect except physiologically you're not detecting it in your in your. In in your neocortex, you're detecting it in, in, in other aspects of your Physiology. So forging success also in seasonal environments, being able to move around from, from, from, from, from, from place to place and be able to be smart in relation to what's available at a given time. More about that presently and then dominance of the food chain. So you know all of these things are linking to something we have chosen to call success. Sorry, the story will flip. And then about a million years ago, uh, fire and cooking evidence for fire. Well, South Africa, about a million years ago, Israel, about 800,000 years ago. So KADIAN in China 770,000 years ago from archaeological remains, sediments of burnt bone ash plant remains. Burnt wood, Flint pieces, bones with cut marks, grains, etcetera. All things that you can infer that well cooking must have gone on. OK. I like cooking. Who likes cooking? Friends, OK, from a functional perspective, what I love about cooking is it's improvisatory nature, which is something that my wife is more sceptical of. Most of the time it works, but I love the improvisation so. I am. That's just me. Maybe it's not just me. We'll find out later. What does? What does cooking do? UM, boring stuff, like increased digestibility. There lots of foods you couldn't eat if you didn't cook them. So did gelatinize the starch when you cook it, it breaks it down, makes it digestible trips and inhibitors you find in things like pulses like beans, lentils and so on. You eat them raw, you can give yourself very bad stomach cramps. You can, you can. You know, if you eat enough of them raw, you could kill yourself. If you wish to live that dangerously through pulses. So trips and inhibitors are. Enzymes that break down proteins that inhibit sorry, inhibit the breakdown of digestibility of protein, so protein may be there in the food, but you can't. Actually digest it. Cooking also denatures protein, makes things digestible, so cooking is, in a sense, the outsourcing of your own Physiology. It's outsourcing, chewing, grinding. Swallowing, digesting. You're cutting with the knife. You're breaking things down. You're cooking them. You're really pre digesting things before they even go into your body. That is a revolution. It's safety, it's reduces toxins, kills bacteria, kills fungi. All kinds, including the safe ones, but let's talk. So with the dangerous ones and it has sensorial effects, improves, you know, changes the texture, taste, smell and colour of foods. And that all encourages, uh, the eating, something that becomes more attractive. OK, moving to flexibility now. And Jeffrey Harrison, along with Eagle de Guerin, had some thoughts about this ego. De Guerin was at CNRS again a friend and a mentor. Uh, way back in the 1980s and 1990s, uh, they wrote uh, this great editor, this great book called Coping with Uncertainty and. Food supply and you know, they thinking very carefully about how important food stress, understanding, food stress and mitigating it was to uh, in the course of human evolution. Now of course, the first aspect of uncertainty of food, if you take it on the grand narrative scale, it's a chart from a book, even didn't mention evolving human nutrition. Uhm, written by myself, Neil Mann, who's a uh nutritional biochemist, and. Sarah Elton, of Durham University, who's an evolutionary anthropologist, is about modern human dispersal. OK, we know it happened, but let's think about how it happened. You have to have some idea of what you're marching into when you start to move out of Africa, you're moving into other ecological niches in which there will be various kinds of uncertainty. One kind of uncertainties in relation to seasonality in East Africa. You may have wet season, dry season, season, season. Quality. If you're on an increasingly drying Savannah, then at least you know your season is going to be mostly dry and maybe three months of rain and you just work out how to work with. That you move N the seasons change, you get up to Scandinavia and the seasons are very different. Uh cold season, dry season, season. Uh cold season wet, cold hot season seasonality become uh become the norm in which times of the year when things simply don't grow so that. You know you're reliant upon. Those what those seasons can offer, and also reliant on the technologies that you can develop that can mitigate against them. We go up to up to Alaska migration there around 18,000 years ago from Africa, you know to to Europe maybe about 40,000 years ago all the way across Australia about 50,000 years ago. Across the Bering Strait about 18,000 years ago, etcetera into the Pacific, maybe about 2000 years ago, a very approximate numbers. I'm sorry each of these has adaptive challenges. The most important one I would posit is in relation to food. Getting how do you because you have to eat every single day and and and so you know by the time you get to the Bering Straits and there are technologies that associate with food, getting, for example, the technologies that associate with being able to to be able to withstand the cold, the cold season. So that's one aspect of. Of adapting to new ecologies and the dietary flexibility that comes with that. Second one is hunter gatherer, dietary flexibility and seasonality. This is from a book by Rob Foley in 1987. I slept on his floor while I got settled in Cambridge. When I when I started there, he was finishing that book at that time that, that, that I that I was there, I was settling to academic life in Cambridge. He was offering me clues as to how he might do this. I never understood Cambridge. Honestly, Nick never understood Cambridge. To be honest. I don't understand Oxford either. But I'm retired and I got. A A friend said to me that it's a bit like criminal law. You'll never understand it. You'll just get a feel for it. So I've relied on that and that. That seems to have seems to have helped Hunter gather A flexibility and seasonality. Let's start with early seasonality. Early wet season when it rains, grasses grow, stems grow, you can get food from things. Leaves that grow. Later in the season you get flowers and young. Leaves later on in the season, you get fruits emerging. I can go into a stocks of chair and look at plum trees and know probably from about six weeks from now where I'm going to find all my wild plums because I just look at where the flowers are. Unless somebody gets there before me that that changes things as so many people foraging these days. But it's become very, very difficult to get there in time. So you have the problem of getting there when the fruits not quite right because you get the fruit, but it's not ready go a week later and it's all been stripped by somebody else. So middle class problem. Beyond that, going into animals as things dry out, opportunistic collection of fish trapped and drying pools, I saw this in Hatter Lake in Australia where pools were drying, fish were lying on the top of the top of the water, the Pelicans were having a feast with with what was emerging. On top of these pools, if you were a forager, that's where you would get your your fish. All concentrated in one place. Opportunities for scavenging of eggs and fledglings going into the wet season. Again, her people were young. You know, this seasonal pattern could only be. Capitalised on. If you are have the dietary flexibility to recognise how food changes across the year. If you think about a zucchini, think about zucchini now. Uh, what's the other word for zucchini? Yeah. Courgette. OK, courgette. Think about court. Yeah, it grows. It produces leaves. You can eat the leaves. It grows a bit more and it's kind of little little thing and it starts to produce the flour. You can eat the flour. You can eat the little zucchini, the zucchini courgette. Zucchini is a better word because if you leave the zucchini it becomes a zucca, which is a grown up zucchini so so you can you've got really several different kinds of foods. From one plant and thinking about intelligently about a plant, you can say, well, I'm foraging here. I could decide exactly how I'm going to manage this particular food, even if seemingly you're only using a limited, limited availability, a limited range of of of plants. So that leads me to thinking about optimal foraging theory to human subsistence. And anthropologists have related this to food choice and related food choice to energy needs, and that at the base this caloric reduction has a basis in Physiology, in that if you are hungry, you're hungry because you are hungry. Calories. That's your Physiology set up for finding and foraging calories. What you eat, how you eat? Determines the quality of what you eat. So if you say I'm gonna satisfy these calories by eating lots of fruit and vegetables, then you're gonna get lots of micronutrients as well, because they are fellow travellers. But you don't have a specific appetite for those things. You have a specific appetite for calories. So that's how come caloric reduction became a thing, because you can you can satisfy. Hunger by satisfying calories, but. But I'll talk more about this when I talk about obesity. Uh, there are caveats to that. So day-to-day survivorship requires energy. Uh energy capture has to reflect this and balance across the day or longer periods, sometimes not even a day. Uh, sometimes across a week. Across the seasons across the years, doesn't necessarily balance on the across the day. Problem with nutritionism is that with, with, with taking nutrient requirements, it says you have to get so many calories every day. Humans don't do that. You know, there are times when you eat very little times when you eat an awful lot, we're going into Lent. There are people who are deciding to to to change what they're eating across lent and change, change their their dietary practises, reduce their food intake and so on. And you know, their intake will balance across the ear, not necessarily across the season. So in terms of foraging and optimal foraging, the best choices are usually the foods with greatest energy return. And the lowest food getting costs. If I take my homonym out of white and woods and put my homonym into Sainsbury's and. Town. Give the trolley. Explain what the trolley is, and off they go. My God, they will have an amazing time because they could forage a week's worth of food in an hour. That is progress. No that it's progress and that's what we're doing all the time. You know, we are still foraging for foods with greatest energy turn and lowest. We're getting costs, except now you know it's not. Plums in white and woods. It's pizza. So evolution success by successful optimal foraging through adaptive Physiology behaviour means that, you know, we can be where we are because we've been able to successfully negotiate our food environments to be able to maximise. Our our food returns and that becomes a burden. Now moving now to Papua New Guinea where I got involved in optimal foraging, uh, where I worked in 1970. Between 79 and 81 between 9/18/1983. And 84. Uhm, Geoffrey Harrison carried out human adaptability research in Papua New Guinea, Karkar Island and another link with the. Harris, since he met his wife in Papua New Guinea. Elizabeth. No. Yeah. Yeah. And I met my wife in Papua New Guinea. So this is the Ferrari Delta. Sorry for that personal note. I got intrigued by this very peculiar staple food, which is palm sago. It's a palm tree. It grows. You cut it down and then you use various technologies to cut out the starch from the middle, wash it with water, you get a big block of starch, and that's food. But it it's totally calories. So thinking about this caloric reduction. It's a good place to think about those sets of sets of relationships, low nutrient content and beyond, beyond energy. And yet it seems to be a successful ecosystem. What people were saying at that time, and I was a public health nutritionist at that time. Was that it's the staple that is causing all the under nutrition that we find in this place and you know me being a natural sceptic, said not so sure what's the evidence. Well, just look. That's what they eat. And this is what happens. Actually, it's many steps in between us. We know. So let's think about this. This is a slide from the. Ferrari Delta, where where, where I worked. This is a Sega palm one that's growing already growing for maybe five or six years. The smaller one there and then there's a beetle nut tree down here. There's lots of things growing as well. What people are doing is. Kind of through planting Sega palms, they were mimicking the rainforest and the way that people used this locality. Using dugout canoes like. Spent a lot of time in dugout Canoe. There's a Sega based energetics economy, one that was intensifying. His population was increasing. This is from work on varieties of on sago use. I looked at local names that were being used that were that were given to segas are being used. They were propagated and wild, and there were some that were just propagated. The Nutrition Survey expedition of 1947 had been in the village I was in in 1947. That's why I chose it. Coraki village. And there was a lot of data about Saga Pre 1947. So I just went back and asked people stuff and said well, you know, uh, take me to your say good got Saco Gardens. We went there we measured I measured stuff up and measured. Planting densities and how many different cultivars, types of soda have been planted pre 19.712 types were. Wanted Post 1947, you know six to four by the time I was there, when in two years I was there, there were down to three varieties. So I was already intensification of palm sago happening across the the 20th century, this intensification. Was the key to actually very balanced ecology. This is the priority delta. Somebody on one of those canoes has got to know the delta, like a London taxi driver knows London and they gotta be able to move around all of this here. I had a map. I would ask people to show where their saga gardens are and they point to them on the map and said OK now take me there and mostly. They wouldn't be far out. They would know the delta that well and they could map onto, you know, an, you know, the equivalent of an ordinance survey map on the on the side of my house. So wandering around this delta, you might go up here to cut, say go. My big mistake was once, you know, said, do you want to come make and say go with us? OK. I said yes. I took my notebook and a pen. I didn't even take a toothbrush. That's a mistake. Because we, we we came, we came back late the next day. No toothbrush, but we got this. Well, you know, we're gonna sleep. We've cut down a few friends, put together shelters and put some leaves on the ground. Sleeping. Yeah, fine works. It works. So they might go up here to cut, say, go. And then on the way back to Koraki village, they might stop at one of these other Sego gardens and see what's growing there. That is like going to the corner store, seeing what's available on the way back home. So in a sense like this so. Go to say good place and stop at a Bush garden on the way before they came back on the days when they weren't making say go 2 days of making say Go was enough energy for the rest of the week. They could go and collect crabs. They go fishing again, going back to the Bush gardens, wherever you know, wherever, wherever they went. So it's a kind of. Gathering, hunting, fishing and horticulture as a as a as a complex. And of course they go back to where they say go. There was starch refuse there. It would attract these guys and off they would go hunting pigs stay there at night and wait until something came to uh, came to sneak sneak some food from the cut down. Say good. And that's what they do. They go, they they they, you know, they get a pig. That would be great. Oftentimes they didn't. Sago grubs, which are insects that grow inside the starch of the of the sago tree, come back two weeks later and just cut down this metre or so of palm. Is that me? OK. OK. Yeah.

You are taking.

Not right now. OK. And these things are OK. Full of protein full of starch. And you know, they can get pull out kilos of these from one particular secretary. Getting crabs, getting shellfish, all of these things contribute to the. Apology. So of course you know any self respecting stats related person. I had to do a multiple regression, couldn't couldn't resist, but the multiple regression confirmed what I already knew from what I saw which was that number of days spent working. Sago meant that people had more time to go fishing and. The more time they spent in in in making sago would also increase the amount of protein that was available because they were doing these other things like fishing and crabbing. So subsistence and dietary nutritional diversity are enabled, but also limited by environment. As I've said, they're enabled by cooking and limited by not cooking. Uh, toxicity is reduced by cooking, but there's one other aspect which is the microbiome. Which takes us closer to the present day and work that has been largely carried out by Italian colleagues in in connection with the colleagues in the United States. The microbiome that gut microbiome contributes to dietary flexibility. But how does it do it? Well, first of all, looking at the. Microbiome diversity and then doing what is called a principal components analysis shows something quite clear. That Italians and Americans have a different microbiome to people for the Hadza people in Bacana, FASA, and people in Malawi, different microbiologists taking the whole complexity of the microbiome. They stratify differently. Very different microbiome. What does that mean? Basically, if we take our Americans and and Italians and look at aspects of the microbiome, basically look at the pale blue guys. These are bacteria which are largely harmful, or negative, or scavenge more energy. Uh from food than uh than than other bacteria. These bacteria are promote health. They increase the digestibility. Of things like dietary fibre. So we're told that dietary fibre we can't digest, but actually you know if you're in Malawi and Burkina Faso living on a very traditional diet, then actually you are digesting. Dietary and getting dietary energy from your dietary. Negatives FICO bacterium, bacteria IDs are all big negatives in terms of metabolic health and chronic disease. So microbiome is already, you know, contributing to uhm, to that flexibility. Now the microbiome. Is altered by what you consume the gene expression. It's not just the bacteria, but it's the gene expression of the bacteria. It's it. It varies according to what you consume, so apologies for this. This is a nod to my first degree, which is in biochemistry, which is still useful, if only to bamboozle everybody else in the audience. Sorry but. Protein versus carbohydrate. This particular pathway is the pathway towards degradation of protein. This pathway down here is the pathway towards towards protein synthesis. If you have a diet that is low in protein, you switch on the genes for producing these enzymes towards uh towards uh producing protein. If you have a diet that is uhm uh rich in protein. Then you'll break down that protein and turn it into the precursors of metabolic energy that you use in your body. What is the importance of this that this is these are genes? In the bacteria themselves, not genes in humans. So this is a more than human metabolism. We have to think about metabolism beyond the individual. We have to think of the human metabolism in relation to the microbiome. Uhm, so the human microbiome. The more human metabolism leads to dietary flexibility, it can rapidly switch between herbivorous and carnivorous functional profiles, and this could reflect past selective pressures during human evolution. Animal Foods would have been volatile variable depending on season and stochastic. Processes and so having microbial communities that can quickly and appropriately shift their functional repertoire in response to dietary change, not just change their composition, but actually switch on genes, would have enhanced human dietary flexibility to other level of dietary flexibility is not just what comes in here. It's what's happening in your gut. So more than. More than human metabolism, more than human metabolism. Is ancient because I'm I was pretty sure somebody would say what about fermentation? So what about fermentation? This is my copy of the normal guide to fermentation. Fantastic book. Really, really, really. Like food hacking in a really good way. Uhm, more than any more than human metabolism is is. These ancient mushrooms going back to 4000 years ago fermentations 10,000 years ago with with fermented milk, cheese, bread, and something that we'll all enjoy at some stage, perhaps beer and wine. All fermentations and this is all in relation to more than more than human metabolism. OK, I'm going to take the last few minutes to talk about present day under nutrition over nutrition. This was my desk just a few days ago. At home. Thought OK, Jeffrey Harrison was also sort of written about human adaptation. He Co edited a book called Diet and Disease with John Waterloo. John Waterloo was a nutrition mentor of mine back in the day and I had a chapter in that book called nutritional Status, Susceptibility to Infectious Disease. Published in 1990, so again showing the the the links between. The two, if we think about undernutrition, UM, the literature is driven by the energy deficit. Paradigm paradigm and that is you know, if you don't get enough food you you know you don't have enough dietary energy and there are strong homeostatic mechanisms to defend body weight to try and lose weight. Anybody here tried to go on a Weight Loss Diet? I'll be honest, who had problems? Yeah, OK. Yeah, within two days, your metabolism's responding to it and saying, look, I wanna keep what I've got and. And so it's a struggle to lose weight, very strong homeostatic mechanisms to to. To maintain existing existing body weight, add to that infection nutrition infection processes. There are so many ways in which this can happen. Can invoke life history theory to look at infection in relation to cross the life life course. Different kinds of disease categories or patterns. Endemic, seasonal epidemic put COVID-19 in there. Urgent and interactions between them. All of them have implications for nutrition and nutritionism and all of them have implications for how one considers food across the the life course in relation to infection and also to put societal processes, acceptance of disease, local understandings. If something is endemic. And it's there all the time. It's common and therefore you you make it common, it's just something that's. Yeah. If something seasonal, then you have structures for buffering against seasonality and mitigating the worst effects epidemic. Then you have meanings of management of an upsurge of disease. The meaning of COVID-19 you can remember, I'm sure a lot of the the discussion and discourse around you know what, what, what is going on and the potential for stigmatisation emergent diseases. Meaning of new diseases, public health and biomedicine, lockdowns, national food security, blah, blah, blah, all of that. So, so many different ways in which nutrition and infection operate together. I want to take you to some recent work I've carried out with biological anthropologist Christina Giuliani at the University of Bologna. Anybody who knows me well knows I follow the food and the blessed us to go to follow food is to go to Bologna. Apart from having amazing food, it has amazing scientists who think very creatively, strangely. Wonderfully and often over food, so Christina and I meet in a part of a restaurant called the office. So we spent time in the office talking about physiological taste as ecological sensing. So. Sweet and bitter taste. Forget all the other things about taste. Just sweet and bitter, which you don't actually know very much about. The Physiology of taste UM are fundamental for sensing food safety and food and infection. So what is physiological taste? I'm saying physiological tastes because there are many different ways of constructing the idea of tastes and staying. Very precise. Is part of a major sensory system, smell, taste, texture, pane temperature. I think you eat chilli Peppers, you get pain, hot chilli pepper, chilli Peppers in something hot gives you a certain kind of sensation which then modulates how you taste. The sweetness or the savouriness of a of a particular food. Try eating a cold Curry versus a hot Curry. Well, I mean just in temperature. And you see how different they taste? You know, simply because temperatures already modulating those those relationships, it's part of an integrated sensorial system. It directs attention to pleasure, displeasure, toxicity, digestibility, and let's say it's evolution significance to survival. I mean put something. Your mouth. Are you sure you want to eat it? If you. Taste some you know. You, I'm sure at least one of you will have experienced eating something mouldy or putting something mouldy into your mouth. I'm very happy to share all the slides with anybody who wants them. Put something into your mouth and it has just a fraction of mould on it. You can taste it and it spit it out. If I can't eat this, we make a decision. Actually, it's camembert. I like the mould up to you, so you can, you know, make your decision. But you only detect that. That particular sensation. Now, bitter taste perception is a key mechanism for protecting against potential toxins as they come into your mouth bitter taste receptors. You can reduce them down to 10s to our receptors. That's a molecular basis of quite simple. It's like Lego blocks. Basically you take, you know, the different taste receptors like there are like. Four different Duplo blocks and you put them together in different ways and it gives you the taste for. Remind me, the taste for sweet taste for bitter, you know, perception of those things. So they you know, that's it's a very parsimonious biological system. Bitter taste receptors of different primate species are many and various humans. We have 25 different types of bitter taste receptors. But here's the thing. We've only got 1 sweet taste receptor variety. Only one sweet is a lot easier than bitter, so that most of the sweetness that happens in nature is sucrose. Propose and that is that particular variant one taste receptor. There are more, but that's the that's the that's the that's the dominant. 125 takes 2 variants for bitterness, so compounds like potassium chlorate like saccharin. Like the bitter taste of onions and capers, the bitter taste and grapefruit bitter taste and cocoa beef and coffee, red wine, beer, all of these things. Are responded to by different kinds of taste receptors. It means that as we have developed dietary flexibility, so we have developed or evolved different taste receptors in response to things that are potentially harmful. So we have a suite of different ways of scanning the bitterness horizon. Of course we can overwhelm this by just saying culturally, I know. Coffee taste bitter. But actually I like bitter. So I teach myself to like bitterness. And then you like it for a range of aesthetic reasons. I'm not going to talk about that, but I'm happy to talk about it in questions, but that's that's certainly true and we can train that now. The weird thing about sweet and bitter taste receptors is that you don't just find them in the mouth in the oral cavity or the nose and sinuses, you find them in the brain. You find them in the small intestine in the colon. You find them in the testes. I can't taste sweetness or bitterness in my testes, but the receptors are there and those compounds are clearly there. And the same goes for different organs of the body. You cannot taste sweetness in your small intestine, even though the small intestine has sweet taste receptors and bitter taste receptors. So what's going on? Well, what is going on is actually a misnaming are sweet and bitter taste receptors, which are actually more about regulating immunity than they are about taste. We just so happen to have identified taste receptors and we know we link them to a phenotype which is. Taste sweet, sweet taste receptor taste bitter, bitter taste receptor and we say well, that's the linkage. But we haven't you know. Looked so far until the last two decades that actually these receptors have found all over the body and doing different kinds of things. I can dig deeper into the Physiology if you want, but I won't because it's part of a bigger suite of G coupled protein. A GG coupled protein receptors which are universal in sensing every part of our. The environment they are, you know, they are the things that mediate the sensorial universe physiologically. So what's going on? Basically, this is uh, this is this is this is in the nose, by the way, in this particular paper, infected bacteria come along, they produce, they consume sugar and they produce bitter microbial products. The bitter taste receptors perceive that they also the sweet taste receptors detect a decline in sugar. In the in in the in in the in the tissues of the nose and and then through release of calcium, they produce antimicrobial proteins with then. Smash the smash the bacteria. So it's a it's a. This is the model for for all of these systems. Of course, we need to be developed in different parts of the body, but it's, you know, fundamentally a a system for a Sentinel response against infection and and then this kind of response also then amplifies the rest of the immune system. So we're already tracking the immune system. Well, Christina doesn't stop there. Christina goes on and she starts to do a a network analysis of taste receptors with and taste receptor genes in relation to a whole range of of diseases and disorders. And what we find is that these has two receptors, bitter taste. Receptors sweet taste receptors are linked to many different diseases, and they are linked to each other in a network of associations. They're all working together as a a a suite of mechanisms for uh for responding to uh, responding to different kinds of diseases. Going one step further, we published this physiological taste as ecological sensing. It's an integrated view of a complex system to talk you through it. Basically, uhm, you eat something. And you respond to it by chewing it, eating it in the mouth, respiratory tract in the gut and. So on there are environmental stimuli which which are one kind of ecological sensor taste is another ecological sensor, and this results in in behaviours. We said this tastes nice, so I'll eat more of it, and that's fine. That's all good. But you know what? Sometimes the response is towards inflammation, and particularly in relation to ultra. Process foods. The consumption of these they taste good, they're fooling us haha. They're fooling us. We want to eat more of these. They taste really good, and then we their behaviour is to eat more of them. It creates a level of inflammation that's inflammatory stress, that is associated with the complications of obesity. With Type 2 diabetes, with cancers with neuropathy is a whole range of things. So underpinning all of this. Is what this system is doing to to to generate inflammation, which is the underpinning of of. Many chronic diseases. OK, just a trigger warning. Some people will have a strong reaction to the next slide. OK, don't look now. Moving to COVID-19, this individual former Prime Minister Johnson had. Much higher weight than when he went to be. When to be vaccinated against COVID-19, think about COVID-19 was. It's the infectious disease that's linked with extreme body fatness. So usually the narrative was about under nutrition and infection, but here we have an infection that's associated with overweight and obesity, very different, very new, completely new. And I'll explain a little bit about how that works. So in the context of Boris Johnson suddenly deciding obesity was important in the middle of the pandemic, he suddenly said we have to put it back on the national food strategy and suddenly we're saying how, how, what, how, how do we do this in in two months? So then they say, well, we have a part A and a Part B, part A then dealt with COVID-19 and and obesity and Part B was really what the national food strategy was meant to be about, which was a a post Brexit food strategy. So how does it go and what's this importance in relation to taste? Well, you know, one of the early symptoms of COVID-19 was was the loss of taste. It's not trivial. Uh, it's not trivial. Because SARS. Uhm, this is that beautiful kind of knitted. You know, modelled virus with bobbly things on that looks very attractive. You might want to put it on your head. In fact epithelial cells, neural neural cells, but also affect taste receptors. Cells in the course of of infection through ACE 2 receptors, it creates something called a cytokine storm. Basically, our immune system goes crazy killing everything, so it'd be like having a, you know, a a killer in the classroom right now, killing everything. That's the size of kind of storm equivalent. It damages neural cells, the olfactory bulb, the thalamus, taste receptor cells. Olfactory receptor cells as well as all the other stuff that's happening in the lungs. So the early thought was that is COVID-19 actually destroying more than we think including neural damage and this might just be a signal for things that are happening in terms of long COVID and its effect on on neurological function. Omicron didn't do the same because it didn't have quite such a severe inflammatory response in relation to in relation to in relation to infection. That link is Boris Johnson takes us to energy surplus and takes us to to obesity on the other side. Energy surplus there are poor homeostatic mechanisms for taking it down. Again, put on weight, and it's difficult to take it off again. There are different contexts in which this happens, but it's a kind of fundamental system of weight regulation. In this case in ecological context. Here's Cascade that suggests how this this might work. We start at the bottom here with Ultra processed foods, exposure to ultra processed foods, all that junk food there in front of you, you have a preference for that. Eat enough of them. You want to eat them? Actually, people who try to come off Ultra processed foods. Find it really difficult because there's a kind of addictive property to them. It takes, you know, maybe two weeks to say, well, actually other foods. OK, because your taste sensors are ramped up, you're used to a high level of sweetness. You're used to not even detecting, you know, the subtlety of taste in in in other foods as. Well, as as well as an expectation of certain kinds of physiological satisfactions being met by eating them, which are neurological. So eating these things, you can very easily overeat, increase body weight, and then you know you can restore your weight to the higher energy balance. Actually, most people who put on weight are in stasis with their body weight. They not actually putting it on or putting. Well, when people put on weight, it's usually episodic and then they come to states at a higher level and it's episodic. Again, trying to take it down, don't have episodes of hunger like we would have had, you know. You know Mike Homan in in white and Woods would experience seasonal hunger and therefore that would ramp it down. It wouldn't be pleasant. But you know, you'd have the energy stores for times of times of. Times of shortage how do you control eating well, the eating environment. How do you choose to eat? What are the structures? What structures? How you eat? Who do you eat with? Then there's emotional eating. You know? My boyfriend dumped me, so I'll just go to the mcvities biscuits, for example. You know, who knows? Is it better than doing cocaine? I don't know. But it's still has the same kind of same kind of effect, and it's using the same neural mechanism, the same neural pathway as as other addictive addictive behaviours. So you have a a range of things that are going on which are not straightforwardly physiological. They're also in relation to to social. Quality and it's complex. OK, I would love somebody to knit this for me. Has got to be a knitting pattern. Probably use AI to find the knitting pattern at the middle. You have the poor person with energy balance problems that is maintaining their body weight. This is the complexity of obesity production, which? Came out of a think tank in 2007 forsight of. Cities, which is a representation of complexity that's 2017 from ecology to complexity models of obesity, and this is a model of obesity. Well, it says over 100 factors that are associated with obesity. There's no point in trying to look for more factors are associated with obesity. They're actually. It doesn't help because no single factor is associated with obesity. So. Let's just separate one thing as well. Obesity is a. Clinical term for excess body fatness and actually that term is contested in the middle range of of of of body fatness. I've got a body mass index that's tipped over 26 today and no 88 kilogrammes. It tipped over last night while I wasn't watching. So now I'm in the overweight category and but I don't care because I know it doesn't matter in terms of my health status, doesn't matter 68 and. What's life gonna do to me? I don't know. I. Mean, you know. It's my body. Mass index isn't going to do it to me. So that mid range between body mass index of 25 and 35, so it doesn't really matter except aesthetically, except in moral judgement in this except in creating norms around which which you might apply on people who are non compliant. Your norms. So on the one hand in this diagram you've got. Food and how you're you're confronted with food and your dietary habits. On the other hand, you have physical activity and how you structure your own physical activity. Then you have psychological factors, ambivalence, and then you have the biological factors, and in the far distance this was the corner the cluster. That that I was involved in in developing this map, which is the societal factors associated with the development of excess excess body body fairness now. OK it's, you know, societal factors are everywhere we know. But you know, they have to be ordered in some way which says it means to say it's a model. It's not right. It's a way of thinking about something. At the extreme, you have the food system. At the extreme, you. Urban planning and how people can structure their physical activity in relation to to, to, to body weight. So and at the bottom you have your biology, genetics with your breast fed. All of these factors. So it's a a model of of complexity so. Obesity, unlike the previous slide, this one. It's not simply up and. Down. It's so many things that are related. It gets ever more, more, more complex as the fact has become more difficult to understand, but also means in terms of trying to do something at the population level. If you push in one place, somewhere else will push. So it's an understanding among policymakers in the early 2000s. Actually, we need to be thinking about pathways, and we need to be thinking about relationality among different policy structures towards towards the regulation of obesity became a policy object in the 1990s. In the UK, because of costing a. Lot straightforwardly. 10 years ago, obesity was costing something like 20 billion a year just in terms of treatment. Another 20 billion year in terms of lost economic production, shall we say so. It became a policy object because it was expensive. Yeah, primarily, I'm cartooning everything. But, you know, that's it. So what's happened since then is that. Apart from the medics and and and public health people, Physiology, genetics, epigenetics, epidemiology, whole range of raft of other disciplines are are now into weighed into the into the obesity. Uh. Of course, with different cultural framings, so economics, psychology, political science, sociology, anthropology, geography, history will have a take these. These are all different ways of focusing efforts on on obesity, of course. The issue is not one of these approaches is right. You know they. Are all wrong. In that they're all missing something. So the reality is that, you know, these different disciplines need to try to speak to each other also within a discipline, you might find that researchers think they're talking about the same thing, but they're not. I spent a decade in the School of Anthropology. Trying to persuade Marcus Banks that we need AI to start to uhm analyse our narratives and analyse our texts. I know a colleague who's done that with Dan. I know Jane Austen has been narratives, discourse analysis, AI, AI driven, discourse analysis. Jane Austen's been done, we resistance. Somehow I should talk with George Orsi, who's a was a a computational linguist here in in Oxford about how to do this. And the story is that basically the way that most people construct their. Field note narratives are difficult to turn into narratives that I can deal with, but that was like 5 years ago. But anyway, so I went to Copenhagen and and as anybody who knows me, I'm driven by the food as well as by the science and the food in Copenhagen is very good in. Indeed, and as are my colleagues, so Tom and Jensen at Auburn University and and Astrid Esperson and Lina Hanson. Have all published worked together in what was called a techno anthropology grouping that was looking at different problems and so we had a a. A workshop in which we basically worked this across the course of a week. So we first of all had uh machine read 414 articles in the English language, found key terms, tag those key terms and then did network diagrams and every day it got, you know, got better and better because we were there. And say, well, what does this mean? What aspects of this don't work? So these are kind of, you know, semantic networks, if you will. So we're reduced down to food, environment, institutional environment, which is about food, family environment, actually oddly about food built environment, bodily food, which is mostly about. Medicine and suggested that when people were talking about obesity and environment, they were actually five different fields. So even in a field that considers itself to be unified, it's not unified, which would, you know, take an STS approach to this is saying, well actually the science is in the course of being made and unmade. Of course, of course. But you know, acknowledging that is actually helpful because you can say, well, what do I need to do to be able to get to what I want to know. And of course, this has policy implications because you're dealing with the food environment of processed food, dealing institutional environments, usually about schools, families. It's usually in relation to childhood obesity and how that's produced and you know they have different policy objects. Well, one thing that we've been trying to do for close to 16 years is to bring some of these voices together. The unheard voices are are are everyday people, but also also sciences scientists finding connections and listening to unheard voices. Bringing social science into the bioscience especially, and actually many bioscientists are very sensible and very responsive because they just don't know how to talk about stuff. So, you know, offering the terminology that can help to understand a phenomenon beyond the simple social science terms like socioeconomic status. It's very, very helpful that you say, well, actually there's an awful lot of theory out there that you can use finally. So walking into the forest of complexity, I've just that's close to the title. I'm doing a A. An editorial for for for Science magazine and I'm trying to work out how to make this work. So yesterday I felt quite romantic in thinking so I felt about walking into the forest of complexity. So that's why it's here and also in relation to in relation to policy, now back to nutritional anthropology, it's become, I'd say, nutritional anthropology. Is, UM, the other things that we've talked about that that we've we've done have been digital food activism. Uh. Uh. Uh disordered eating, colonialism and food. Also food systems, public health, nutrition interventions. Uh. The anthropology of policy. The anthropology of complexity. Securities and food insecurity. So it's kind of morphed into into yet more different things and so difficult to say what The thing is in terms of nutritional anthropology, except that it's all over the place, and I'm happy for that. And finally, for Elizabeth, that's car car island. Thank you so much.

Thanks for listening to the Oxford Anthropology Podcast. For more episodes, visit podcast Ox, AC UK Slash anthropology or find us on Apple Podcast audio.