VIEW to the U transcribed
Podcast #7
Professor Gary Crawford

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Carla DeMarco (CD): *This* is the voice of a seasoned researcher.

But you can still hear the sense of wonder and passion today's guest Anthropological Archaeologist Professor Gary Crawfod has for the research he has done for the past 40 years.

On this edition of View to the U podcast, Gary takes us on a journey through his scholarly explorations of Japan and China that span his career, the early influences that have inspired his life-long curiosity for cultures and peoples, and the changes he has seen over his time over at the U of T Mississauga Campus where he has been on faculty since 1979.

Hello, and welcome to VIEW to the U, an eye on UTM research. I'm Carla DeMarco at U of T Mississauga. VIEW to the U is a monthly podcast that will feature UTM faculty members from a range of disciplines, who will illuminate some of the inner workings of the science labs and enlighten the social sciences and humanities hubs at UTM.

Professor Gary Crawford is a faculty member in the Department of Anthropology at the University of Toronto Mississauga. His research area of expertise is in archaeological botany and environmental archaeology in which he investigates the origins and intensification of agriculture, as well as a population's connection to plants, particularly in East Asia and China.

He speaks Japanese and English, of course, and works in French, but says he is struggling to deal with Chinese Mandarin.

Gary was elected as a fellow of the Royal Society of Canada in 2007, and has served a number of administrative roles at the University of Toronto including Graduate Chair of anthropology from 1991 to 1996, UTM's Associate Dean of Social Sciences from 1999 to 2003, the Acting Director of the Division of the Environment (Arts and Science) at U of T in 1998,

and UTM's Anthropology Chair, 2004 to 2010, where he is currently the Interim Chair of the Department.

I see some long words on your website related to your research, like paleoethnobotany and archaeobotany. I thought this would be a good starting-off point for us today to talk about what these words mean, but also, if you could provide an overview of your overall program of research, and in layman's terms so that the average person will be able to understand.

What it is that you do?

GC: Paleoethnobotany and archaeobotany are situated in a bigger field of archaeology, and maybe I can start there.

Archaeology looks at the human condition through time and space, which is more or less what anthropology does. I'm an anthropological archaeologist, but archaeology focuses on the material culture, the things that surround us. The typical definition of archaeology is that we are reconstructing the past using material culture artefacts, but we do more than that. We can even study the modern situation. We can look at trash disposal patterns and then see how we might be able to change the way we deal with trash in society today. That's how broad archaeology is.

My particular focus in paleoethnobotany and archaeobotany is the examination of a particular type of artefact in the ground, and that is the plant remains. I'm also trained as a botanist, an ecologist, and we collect either burned garbage from sites and then we do sort of the forensic study of it in the lab.

In many situations like water log sites, the plant remains are preserved because they're coming from mud that has no oxygen in it, so there's no organisms and the material doesn't decay. There are dry caves, too, where there's no moisture, and that means that plant material doesn't decay either. There's no bacteria, no mold, plant remains are there. We look at all.

CD: Is there a particular plant that you're focused on?

GC: Eventually, in a project, we begin to focus on some particular plants. The first approach is to collect everything and look at the big picture, and then hone in on a particular topic.

The definition of paleoethnobotany then is the examination of human interactions with plants in the past. We have to look at how humans interact with the plants today to understand the plants yesterday, but more or less, we're looking at how humans interact with plants in the past, what

we used plants for in the past, whether it's food, drink, medicine, technology, that kind of thing.

In my own research program, I'm looking at the big picture to some extent. I'm looking at ancient human ecology, how humans are placed in the environment and how we're placed in the plant world, how plants react to our presence and how we either purposefully or just by accident change the plant ecology around where we live and do things.

More specifically then, my research program these days is looking at a particular type of ecology that we more popularly know as agriculture. Agriculture is a particular kind of an ecosystem that we create, but we put certain plants in it, and we try to remove certain plants from it. In the modern world, the plants that we use in agricultural fields are genetically altered to succeed in those environments, so they've, over the last 10,000 years, these plants have changed so they are successful living with us and that we can harvest them.

One of the plants that I'm focusing on these days is the Asian rice. We're looking at the origins of agriculture in general in China, but we're trying to see how this aquatic grass ... It's a grass, it's no different than the grasses you see in your lawn except that it's an aquatic grass. It grows in water, and the seeds are delicious. That's what we eat. We eat the seeds, and we want to be able to collect those seeds in bulk.

Wild rice, and all wild grasses, they have this natural seed dispersal system where it's important to them that as soon as those rice grains are ripe that they disperse, that they fall into the water and they not get into the mouths of birds and people and they get into the mud so the plants can reproduce, which is not what people want. We want those seeds to stay on the plant so that we can go in and harvest them when we want to.

The two main characteristics of a domesticated grass like rice are that they ripen at the same time. Wild rice plants, the seeds ripen over a long period of time, and so you have to be a really patient human to, "Oh, there's a rice grain. I'm going to get that now, and tomorrow there's another few," and you're going to starve.

Rice that humans harvest all ripens at the same time so that we don't have to waste our time. We can go in and harvest them over a few days, but we also don't want those rice grains to fall into the water and stick in the mud. Many grasses have a mutation that exists in a small percentage of the wild population, and that mutation is one that doesn't disarticulate the grains from the plant. That is, they don't break away from the plant naturally. The same process that we see here in the fall with leaves that the leaves turn color, and then the leaves are cut away from the tree, and fall is what

happens with grasses when they ripen, so the plant produces a cell layer that cuts the fruit from the plant, and it drops off. We don't want that.

We've selected for the rice grains that don't produce that. The grains just stay on the plant, and we actually have to thresh the grains. We have to tear them from the plant and then process them, but that's a small price to pay for being able to go out over a couple of days and harvest the rice and for the rice not to disappear.

Our question is, how did that happen? This happened roughly 10,000 years ago, and these people didn't have the labs that we have. They were using their own observations and they were using their own skills and the teaching of their parents and their grandparents and so forth to understand how these grasses behaved, and they knew how they could select them and so forth. We're trying to figure out when this happened and under what circumstances and where.

We've been doing that with a number of plants. We've looked at soybeans. We've looked at the domestication, and the whole process is called domestication, bringing them into our household. We've looked at peaches and soybeans and millets, which are small-grain grasses that most of us only see now as bird seed, but these were human foods.

CD: As you were talking, though, you did make me remember something that you told me a while back about, isn't there some tool named after you in China?

GC: Not named after me, but there's a flotation device that I took over to Japan and China, and now it's spread like wildfire throughout the archaeological communities in Japan and China and to some extent, Korea.

The way we collect these plant remains from sites is by through a very simple process. We take the soil from, say, a fireplace or a storage pit or a house floor, kitchen area, and we put the soil or the sediment in water. The sediment sinks, the charred material floats to the service, and we decant that material into sieves, dry it, and then look at it under the microscope.

This process we call flotation. There are many, many ways to do this, but I devised this hybrid technic, an eclectic technique where I borrowed aspects of a number of different methods, put them together in one machine that we had built in the workshops here at UTM, and then we ship them overseas, and we began using them there.

What happened in Japan in the late 1980s was that the field crews there didn't like this big square machine that I brought over. Most of the field

workers in Japan at the time were women, and they complained about the unwieldiness of this big machine.

We simply asked them, "Well, what would work for you?" The field crews then gave us feedback on what would work for them, and they said it work better if it was smaller and rectangular and had these particular features, so we built those features into the next generation of machine, and that's the one that has taken off. We built a few here and sent them over, and then the folks over there just started building them there, and they have taken off. Most archaeological projects in China and in Northern Japan right now use that design.

When I was in Japan this winter picking up on research that I'd been doing there, and this is how you realize you're getting a bit older, my machine is in a museum, but as an educational tool to show students and others how this process works.

CD: Did you patent it?

GC: That's another interesting story. I mean, it's not ‘patentable,’ if that's a good word, because all the different features are in the public domain, but a younger colleague in Japan, early 1990s, decided that he wanted to patent it.

It actually went to court because the archaeological community said, "You can't patent this. This is public domain, and if you patent it, then you're controlling this important device." The archaeology community won, the patent wasn't granted, and so now everybody uses it. I'm proud that people associate it with me, and it's gratifying to see the results coming from it, and it was all about coming up with the original design that actually I stole from several other machines and put these features together.

CD: But I like that you went back to the people that would be using it to say, "Okay, what do you want? How would this be a better performer?"

GC: The motivation wasn't, they weren't going to use the old machine anymore, so we're done. We can't use this. Okay, so how do we fix this?

CD: What do you think that these things that you're studying and the people's relationships to plants and things like that, what do you think that that is telling us about civilization, either the current civilization or the ancient civilization.

GC: I like to start thinking about that from the perspective of both identity and our survival. Let's look at the identity part first.

One of the most exciting, and to me, at least, profound discoveries happened in the early 1980s. I've been working on the prehistory of Japan for a number of years, and the period of time that I was working on was roughly 8,000 years ago to about 4,000 years ago. It's a really curious and fascinating culture called the Jomon culture, and a very successful culture, long-lived, one could argue that this culture lasted about 15,000 years.

Without going through huge dramatic changes, and it sort of goes against what we see in the archaeological record in other parts of the world where we see this steady movement of societies from hunting and gathering to farming to political systems to centralized authority with the state and then oppression and warfare and on and on. That story we see repeated so many places in the world, but in Japan, we just didn't see it.

This adaptation got going in beginning, say, 15,000 to 17,000 years ago, developed and then stayed that way for thousands and thousands of years. We wanted to see what was going on with that. Fast forward to the issue that really startled us, and that was that in order to really put flesh on the bones or fruit on the stones of the peaches, I had to look at the more recent archaeological record in Japan, in Hokkaido in particular.

We're working out of Sapporo in Northern Japan. Hokkaido University was going through some developments. They were expanding and building student dormitories and new buildings and building new roads on campus. It turns out that that campus is just covered in archaeological sites. They had to rescue these sites. They had to record the past on campus before they could build on it. There's a number of archaeological sites on the Hokkaido University campus that date between, say, 700 A.D. and 1100 A.D. Those sites immediately predate the indigenous cultures of the north called the Ainu people.

The Ainu are known in the literature and historically as being fishers, hunters, and gatherers of the northern forest, and that's still a population notion in Northern Japan. These people were seen to be the outcome of that long history they had been studying between 8,000 and 4,000 years ago, so we assume that they were the direct ancestors of those people.

We said, "Let's see how their plant use worked and how they interdigitated with the ecology, and let's see if we can get better data from 700 A.D. to 1100 A.D. that's going to help us understand that earlier path." Generally speaking, we see preservation in the more recent past being better. We can also then speak to the descents of those people, they still live in Hokkaido, and speak to them about their perspectives on Hokkaido and plant use, what do they do with plants, and so forth. It was a great project.

Within a couple of months of beginning work on this project, my colleagues in Hokkaido doing flotation at these sites, and I hadn't yet arrived in Hokkaido to work on this, but I got a phone call one day from my mentor and colleague at Hokkaido University. He said, "Gary, we have found some interesting seeds at this site. We found a few grains of barley and wheat and some others things. We need to talk."

I actually was in a fortunate position and was able to get to Japan fairly quickly and looked at what they discovered. I was shocked. These plant remains were substantial. They weren't just a few grains of wheat and barley. These were tens of thousands of grains from every sample that not only had wheat and barley, but they had soybean and adzuki bean, cannabis, millet, the whole range of crops that were in existent in East Asia at the time.

Within, essentially, days of doing flotation on these sites that were ancestral to the supposed hunter-gatherer fishers of Hokkaido, we learned that they were farming, and that was a head scratcher. What is going on here? That led to years and years of research in which we discovered that the Ainu ancestors were not these isolated folks who lived in Hokkaido. They were part of a bigger world. The Ainu were actually probably closer equivalence to Medieval Japanese than they were to their fore-bearers who were these Jomon people, and that through every step of sociopolitical development to the south in the rest of Japan, the Ainu were changing. They were responding to everything that was happening in the south almost precisely at the same time. This became a question of identity. Who are the Ainu, what's their past really like, and that had political implications too.

The Ainu went through a long period of discrimination. They were treated very, very badly. Their lands were taken from them. Part of the picture was to create this picture of the Ainu as the primitives, the people who didn't have as elegant a past as other people, and therefore, it was important to develop them. We can take over their land because really, they didn't have a strong connection to it.

It was all sort of the same old colonial story, but by finding out what the archaeological record was really like, and of course, my training in anthropology tells me this all along, and that is that all peoples are brilliant, sophisticated, have a deep knowledge of where they live, have deep traditions, and are connected politically. We were able to simply show that what we all believed to be true as anthropologist was actually the case.

We went from simply looking at plants and the interaction people of the environment to a bigger sociopolitical issue. For me, that was incredibly

exciting. Now we see Museum exhibits in Hokkaido completely revised. We see changing attitudes towards the Ainu. I don't take credit for that. We were part of a changing narrative that brought the Ainu people into the mainstream in Japan. It was their efforts, too.

There was an elder in one of the indigenous communities in Hokkaido. His name was Kayano who played an important role in helping convince Japanese and the Japanese government that the Ainu were people who deserved rights and attention and so forth, and there were so many other complications. It was more a matter of the timing that our archaeological work matched other things that were going on in Hokkaido at the time, and it just fit, so we don't take credit for any of the changes but-

CD: But you're adding to this piece of-

GC: We added, it was a piece-

CD: Right, yeah.

GC: ... to the puzzle that I think helped. Around the world, I think archaeology is a very political endeavour. We really have to be aware of how political we can be because what we do is rooted in the land and space and ownership and who belongs where, when, under what circumstances, so we have to be sensitive to that.

CD: Getting back to the question of what does this tell us about civilization, I just can't help but reflect on what you've said about same old story. This happens time and time again.

GC: Time and time again. I think that the message that archaeologist, not just archeobotanist and paleoethnobotanist, can teach is that these folks have complex pasts, and colonialism, to some extent, has tried to erase some of that.

I grew up in Canada, and going through the school system here and elementary school, having been taught about indigenous people in one module, and as I recall, it was sort of set in the past, not so much these are people who live in Canada today.

We were steered as kids in the wrong direction. It wasn't until I started studying in university and meeting other people, some of whom were from First Nations that there's a vibrant world out there of indigenous life. How did I go through the school system not knowing that? What we can do now in the university is also add another voice to these issues about we can teach, we can encourage people to read about these issues and to go out there, and hopefully bring more indigenous students to UTM as well.

CD: Yeah, and so then my next question, though, is about how did you initially get interested in this area. I know you've been working at it for a while. What led you and were you always interested in other cultures and in Asia?

GC: To your last question, no. To your first question, my interest in other cultures came from being taken out of Canada in my early years. My father was a career Canadian Air Force member, and he was stationed in France for about four years over the period time when the Berlin Wall was built and The Cold War was at its pea, it was tense. We were brought over as a family to France to live for four years while all this stuff was going on.

My parents were both curious people, educated. Both of them had their educational aspirations curtailed by World War II. Both joined the Air Force. Both contributed to the war effort, and when the war was over, and my mother retired from the Air Force, my father continued in the Air Force, and that ultimately led us to France and living there for a while. My parents wanted to make sure my brother and I had opportunities. Every spare moment, they were dragging us to this Roman ruin and that Cathedral and this art gallery, and at the time, it was probably early 1960s version of the word "boring."

The reality was it *wasn't* boring. We began to look forward to these travels and visits, so we traveled everywhere we could around Europe. We camped everywhere. As a result, I got interested in other languages and people we were visiting. We had good friends in the French community.

When I was younger, it was normal to have people around you who thought differently about the world, who had different experiences, and I maintained that curiosity. I guess when we moved back to Canada, I was a bit taken aback by how homogenous things were. I came back with this interest in history and other people, but my father and his grandfather and family were all outdoors people. First thing my father did when the summer came on and the first year we were back in Canada was he bought a canoe, and he made sure that my brother and I knew how to paddle a canoe, that we knew how to camp outside, that we knew how to travel outside, that we could live off the land for weeks at a time if we needed.

Then in high school, one of the leaders of the Canadian Outward Bound program moved to Kingston where I went to high school, and he was at Macarthur College, and his son joined our class. With his influence, we decided to start an Outward Bound Club at our high school. We had to learn even more about how to live off the land. We would take our fellow students on these survival jaunts.

I began to learn more about botany and what you can use plants for. In order for me to understand that, I had to start looking at some of the indigenous botanical literature. What did people use for plants? What was going on out there? Here I was in high school, thinking about ethnobotany at the time, not really knowing that that's what it was.

Then I came to the University of Toronto as an undergraduate to study science. Did well in high school. That's what a young man did when you did well in high school. You either went into engineering and sciences. My friends wanted to be doctors and engineers, and I wanted to study sciences, particularly astronomy. The thing that really enamoured me with astronomy was the concept of time. Looking back in time that you were seeing the universe in a perspective they went beyond day-to-day concepts of time.

I was always interested in archaeology, but I didn't think as a young Canadian kid from a high school in Kingston that that was something that you could formally study until I came here and realized that some of my friends were studying this thing called anthropology and archaeology. I thought, I'm going to take a look at this. Took a course in archaeology and had one of these epiphanies and said, "Oh my God, you can actually do this. I'm going to do this."

Then I had a teaching assistant in a geology class who was studying paleobotany. He was studying the evolution of flowering plants, and I think it might've been him who suggested that there was as possibility I could connect my archaeological interest with plants, and he gave me another professor's name to talk to at the Royal Ontario Museum. I spoke to him, I spoke to other people, and I said, "I can do this."

I enrolled in my own program. Back around 1970, there was something called The New Program. You didn't really need to declare majors and specialist, as you long as you took care of your prerequisites, you could make sure you got the program you wanted. I took a program in biology and archaeology. Just made up my own program. When I went to grad school, I had to lie about my background. I said, "Yeah, I have a degree in archaeology," because that's what they wanted to hear, but technically, at the time, my transcript wouldn't show that, but you could see all the courses. That's how I was able to get the background that I have right now. I've made up my own program.

I planned to go to graduate school to study with one of the people that I felt was the top paleoethnobotanists, one that I liked and one that I wanted to study with at the University of North Carolina in Chapel Hill. I did end up studying with him. It was just a remarkable time, but that track would've strictly kept me in North America.

Just before I went off to grad school the beginning of my fourth year, I ran into the archaeologist that I was working with as a research assistant, and he said, "You're going to need a cool topic for your M.A. thesis at Chapel Hill." I said, "I just got invited to go to Japan next summer. How would you like to come with me?"

I thought about that for a full five seconds, and just said, "Count me in. Go to Japan?" I went and enrolled an additional course in my fourth year. Japanese. I wasn't thinking strategically about marks and getting into graduate school. I was just thinking I need the background. I'll do well. Who cares.

Little did I know how hard that was going to be to pick up a strange language in my senior year as an undergraduate on top of my regular course load?

I did it. Got into grad school. Everything was okay after that, but in hindsight, it wasn't wise, probably, when I'm trying to get into grad school to get my marks up. But it worked.

CD: The rest is history.

GC: The rest is history, and the Japanese research ultimately meant that in order to figure out this history of this agricultural complex we found in Hokkaido, I eventually decided to track the history of that complex into China, and no one was really doing that kind of research in China, so I introduced this work on plants to many colleagues in China. There was an interest in it and people had been doing it, but I wanted to really push it a little bit further, and now it's one of the most popular subdisciplines in Chinese archaeology. It's just incredible. I can't keep up with what's going on there now.

CD: What do you think is the biggest impact of your work? We talk a lot about impact, and I know people talk about different things, student engagement and student training, but of course, you're shedding on this light on past cultures, though, but what do you think is the biggest impact?

GC: That's a hard question. Probably have to ask other people, but my sense of my impact has been methodological and seeing that this research program and paleoethnobotany and ancient ecology now has blossomed in places where it was, at most, a passing interest, and now, it's really core to these disciplines, and we're learning more and more about how humans interacted with the plant world.

We've learned that hunters and gatherers, for example, we're not simply Garden of Eden people, a happy-go-lucky fishing and hunting just

opportunistically, that they were systematically dealing with the environment. They were extraordinarily knowledgeable that they manage these ecosystems, they change the ecosystems to benefit them, but given their populations and the way they were dealing with the environment, they were mimicking natural certain processes.

One of the big things that it looks like they were doing was burning parts of the landscape in those days when we think of them as hunters and gatherers. By burning, they were selectively culling species, producing more growth of certain species, blueberry's a classic example that flourishes after a fire. Other plants respond similarly. When plants are responding that way, there's a lot more greenery and shrubbery, the undergrowth, I should say the detritus in the woods is much less and that the wildlife changes, too.

You have far more deer. The deer populations may get somewhat more numerous, but you could predict where they're going to be. They're going to be where I burned. People strategically managed the landscape in a number of different ways. That's been a real revelation in the last 30, 40 years, and I'm just one of many scholars working on that particular topic.

We see that happening in Ontario in the past, and then we've made major inroads on the understanding of why people turn to agriculture. We've established baseline in Ontario with how agriculture developed in Ontario. We've established major benchmarks about how agriculture developed in China and in Japan. We've been participating in those archaeological programs, and my contributions have, I think, been fairly substantial.

Beyond that, though, has been the teaching, having graduate students who are now professors in China, Korea, Canada, the US, Japan. That's really satisfying. It's all about knowledge mobilization. At the undergraduate level, the kinds of things that don't come out in our research programs or even our CVs that are exciting relate to our teaching here.

Right now, I'm teaching a huge second-year course that teaches the critical application of scientific method, and the course is on fantasies, hoaxes, and misrepresentations of the ancient past. I started teaching that course before fake news became a popular term. I was dealing in this course with fake archaeology and providing students the tools to assess these popular notions of the past by using some simple scientific methods, thought processes, evidence-based reasoning, and saying, "Wait a second. Does this really make sense?" and then, how can I assess whether Turin Shroud is authentic? How can I assess these stories that I read about crystal skulls and their power? How can I tell that what I'm reading about the past is actually authentic?

I teach a course on that, and I'd like to think that students coming out of that class are leaving with critical skills that can be applied beyond the archaeological world. The archaeological stuff is fun. A lot of it, one might think is harmless, but some of it isn't harmless.

If we can critically assess it and fight that misinformation, then having an accurate understanding of the human past is important for us when we move forward. Calling on mysticism and thinking about our past being full of mystics and magicians and that people in the past had powers that we need to retrieve or they had knowledge that we need to retrieve is steering us in the wrong direction. We need to base what's happening on the facts.

However we get at those facts doesn't necessarily matter, but just as long as what we're dealing with is an accurate representation of what happened so we can move forward.

Climate change, for example, is something that we're all concerned about now, but our notions about the climate in the past need to be assessed. By looking at how people dealt with these changes in the past, I think we can get a sense of hope for us as long as we maintain some humility about what's going on today.

I think archaeology teaches us to be humble about the past and think about how responsible our ancestors were. We need to move forward with that knowledge rather than arguing about climate change not being human-induced so we don't lose jobs. Well, that's such a simplistic and incorrect interpretation of my view that we need to have a better perspective on it. I hope that archeologists, our voice that's being heard in terms of what lays ahead of us.

CD: Coming up, UTM at 50. Gary talks about the changes he has seen over his time at U of T Mississauga and the extension of the campus on a number of fronts, including diversity, research activity, the student body, and the department of anthropology.

I'm going to switch gears a little bit now because I am going on to UTM at 50. When did you come to UTM?

GC: I was hired in the anthropology department in '79, and at the time, there were people here, people in the department, they were hired at the very beginning of the college, so I'm kind of second-gen anthropologist.

CD: Right. You've probably seen a lot of changes in your time. My last two questions are really about what kinds of changes you've seen and what changes do you see on the horizon for either UTM and/or your department?

GC: Seventy-nine is a deep, dark past, but I remember it vividly because one's first year of teaching is hell on Earth, and the adrenaline is flowing, so those memories are deeply imprinted. It was a small place with a couple buildings, and relatively homogenous, one could say, ethnically. Today, it's an incredibly diverse campus. Once Canada's immigration tactics changed, the complexion of our campus changed, too.

In terms of teaching, one has to think about everything from examples to metaphor and so forth, that things that I used to say in class that I knew everyone would understand, probably most people don't get now. That's an important issue. We only had a few thousand students on campus, and now, we're 13,000 or so? We're as big as many universities throughout North America, whereas before we were a small campus, generally thought of as an undergraduate school that fed the local community, but we're not that anymore.

It was wrong back in '79 to think that as an undergraduate institution means we had graduate students here. There was a research profile on campus in '79. We just needed to expand it, and we've done so. I think the campus has become more integrated with the community. It was integrated back then, but with that foundation, it's become even more closely entangled with the community. We have gone from just half a dozen people in my department to, it's hard to keep track, probably by this fall, we may be up around 16.

Back in the early days, we tried desperately to cover all aspects of anthropology, just the few of us that were here. Now, we legitimately do that. We cover biological anthropology, archaeology, sociocultural anthropology, and linguistics. Now, we even have the focus on the anthropology of health. We've become, I think, a major player in a multi-subdisciplinary anthropology world, then having the graduate program, of course, connected through the rest of the university means that the three-campus anthropology department is probably among the best in the world, and it's great to be a part of that.

We're research-intensive now. Every colleague in my department has a vibrant research program. In '79, I would say that that was not the case. It was probably split half and half, and today, everyone has a deep interest in research, that everyone is engaged in research enterprise, and students are participating in that.

CD: Do you see much more expansion happening or are we sort of levelling off?

GC: I don't want to give all the cards away. I don't want to tell the Dean that no, we're fine. We need to build on a few weaknesses. The two

subdisciplines in anthropology that are busy in terms of committee work and so forth maybe don't have enough faculty to cover all the bases.

Biological anthropology is particularly in need. Biological anthropology's pretty diverse. We do everything from human genetics to osteology, that is, the study of human skeletons, looking from everything from growth and development to pathology, but we look at it from a cross-cultural perspective. That is, we look at osteology, that is, the human skeleton from the perspective of different cultures, different populations. It's fascinating to see how the skeleton changes across different cultures. There's that aspect of it. There's health that's part of it, too. Then there's human evolution.

We've just hired a young scholar who deals with human evolution. We've hired a new scholar who deals with the evolution of sleep, but we're still lacking in that we offer courses in forensics. It's just such a diverse field, and the demand is there from the students. We need to do more with that.

CD: Thank you so much for coming in today and speaking to me about your work.

GC: My pleasure. This has been fun.

CD: I would like thank everyone for listening to today's show. I would like thank my guest Gary Crawford for coming in and speaking to me about all the things going on with his research program today and in his department.

I would also like to thank the Office of the Vice-Principal, Research, for their support, and thank you to everyone who has been helping to promote this podcast.

Special thanks to Tim Lane for his music. Thank you.