

Cassie Sevigny: Katrina is really open minded, always interested in learning new things, curious, always open to new perspectives or information, and also just delightful and delighted.

Derek Sheehan: I guess Katrina's background can be intimidating, she got a PhD from Cambridge and is a leading researcher in her field. But she always treated me as a peer. This was nice, given the general feeling of imposter syndrome everyone feels in graduate school.

Teigan Avery: Katrina is warm and caring, along with being wicked smart.

CS: Katrina both supports and challenges her students to be their best. Grad school can be really really tough, so having her confidence in me, even when I felt like I wasn't doing my best, helped me get to a point where I did feel proud of my skills, and like I could take on more challenges.

KINCH: This is Confluence where great ideas flow together, a podcast of the Graduate School of the University of Montana. On Confluence, we travel down the tributaries of wisdom and beauty that enrich the soil of knowledge on our beautiful mountain campus.

You just heard the voices of Cassie Sevigny, Derek Sheehan, and Teigan Avery, graduate students in UM's Economics Department, talking about our guest on this week's episode, Dr. Katrina Mullan, who's been at the University of Montana since 2011.

I'm your host, Ashby Kinch, Dean of the Graduate School. Every episode, we ask our guests to read a poem, or a short passage from literature, about rivers. Katrina has chosen the opening passage from George Eliot's "The Mill on the Floss." That's the pen name of the great English novelist, Mary Ann Evans, who chose a man's name so that, among other reasons, she could avoid being pigeon-holed as a writer of lighthearted and sentimental romances. She became the great "psychologist" of the English novel tradition, writing with penetrating insight into the motivations, both altruistic and petty, of the village characters whose lives she limned so richly. It's an apt choice, on many levels, for our guest, Dr. Katrina Mullan: the passage launches us into our conversation, which traces Katrina's journey from the United Kingdom, where she was born and completed her graduate work, to the United States, where she explored several regions before landing here at U.M. We discuss Katrina's research in developmental economics, where she works at the interface of economic policy and environmental impact, especially sustainable agriculture in South America. We also discuss the collaborative, interdisciplinary work she does in health economics, part of the way she models for her graduate students the importance of seeking out new areas to apply their skills and talents.

Welcome to Confluence, where the conversation flows with a lively current!

Katrina Mullan: This is a passage from George Eliot, "Mill On The Floss."

A wide plane where the broadening floss hurries on between its green banks to the sea, and the loving tide rushing to meet it checks its passage with an impetuous embrace. On this mighty tide, the black ships laden with a fresh scented fur planks, with rounded sacks of oil bearing seed, or with the dark glitter of coal, are born along to the town of St. Ogg's...Just by the red roof town, the tributary ripple flows with a lively current into the floss. How lovely the little river is with its dark changing wavelets it seems to me like a living companion while I wander along the bank and listen to its low placid voice as to the voice of one who is deaf and loving.

AK: Thank you for joining Confluence Katrina.

KM: Thank you. I'm glad to be here.

AK: So I'm so excited that you chose that particular passage. It just, my heart fluttered when I saw the email. I love George Eliot. Of course, you know, for the listeners who don't know George Eliot's, you know, work. That's the pen name for Maryann Evans, incredibly important English novelist from the 19th century. Why did you pick that?

KM: So I was thinking through, you know, the idea of rivers, the idea of books that drew on rivers, and one of my very favorite books is another one of George Eliot's novels, Middlemarch, which is a huge novel of lots of people, their desires, their interactions with each other. And so that kind of put her in mind. And then I was thinking about other novels with rivers. But that was kind of where I was coming from.

AK: Yeah. And, and, and I, you know, there's so many layers at which it kind of connects to your story as an economist, right? You just talked about motivations of people. And that's such an important part of her work that she is the great psychologist of the English novel tradition. And my view, she understands the kind of dark corners of human behavior. But it's also a mill, right, this economic engine, the novel itself is set, you know, around that mill, and it's at a crucial economic transition in English culture. And then the main characters, you know, Tom and the sister Maggie, it's been a while since I read it, but I think that's right. You know, they die on the river together in an embrace. So there's something kind of symbolic about the shifts in the English economy going on there as well, potentially?

KM: I think there is, I think the bit that really draws me is how the economic context and the social context that people are living in, in combination with the things that matter to them personally, which vary for each of the different characters, how those things come together to determine what each of the characters does, and how those characters interact with each other, then that really fits with the way I think about economics, which is everybody has the things that they care about, the things that they value, and that in combination with the contexts that they're in, you know, the social relationships they have, the economic relationships they have, determines what they do, and determines how their

choices affect other people.

AK: That's so fantastic. And so hopefully, we've made some converts to George Eliot today that...

KM: Or to economics.

AK: Yeah, one of the two, exactly, both maybe, but it'd be great if, yeah, more economists read George Eliot. And certainly, we hope the, especially the conversation will inspire people to think more about economics. So tell us a little bit about that, about your story and how you got into this as a student, and you know why you chose the professor's life in particular.

KM: So I guess there's two parts to that. One is why economics, and the other is why professors life. And I chose economics early. So I'm originally from the UK, I grew up in England, where you really decide your path at the age of about 16. And I debated what to study, thought I'd give economics a go and from that moment, age 16, it was what was fascinating to me, it was a way of looking at the world that I knew I wanted to keep looking at the world that way and keep studying that. So the economics part was easy. And then the professor part, I finished my economics degree. And then I really was interested in how you could use economics to inform policy. That's the aspect of economics that really drives me is thinking about how to make the world a better place by using the theory and using the methods to understand how people will respond to policy interventions, and what that means for how effective they are. And so I worked for a few years at the UK Department for the Environment as an economist, actually working directly on policy design, which was really exciting to work on policy design, but I, it was not in depth enough for me. I really wanted to be doing the research. And so I went to grad school, continued down this path, and haven't looked back.

AK: So that's really interesting. At the time that you took that job, how common was it to have a Department of the Environment with an in house economist? Was that kind of a new movement that you were part of looking back on? Because it seems, of course, important to your future plans. I mean, you know, that you were already interested maybe in environmental policy, but here's an opportunity to actually work on the applied side of it.

KM: Yeah, it was reasonably common. So there were, I was in the Ministry of Agriculture and Environment or the Department of Agriculture and Environment. And there were maybe 30 Economists working there, at least. So it was important, but there was a kind of growing trend towards, in particular, trying to understand how people value the environment. So that was something there had always been economists working on environmental policy. But policymakers who weren't economists really wanted to understand when we're making decisions that might have economic costs that might have implications for jobs or for the prices of things. How do we weigh that up against these benefits of cleaner air or cleaner water. And so there was a push to show to the general public that people care about clean air and clean water, just as much as they care about the price of gas. It's just that because

those things aren't bought and sold in markets, it's harder to see those values.

AK: So you needed another mechanism to sort of account for that value.

KM: Yeah, to understand well, how much importance do people place on these things? And so how can we weigh them up against the cost of these environmental policies?

AK: Fantastic. And so when you headed off to do your PhD, you kind of had that framework in mind that you wanted to do some of the applied work, particularly in environmental work.

KM: I did. And in fact, I moved into environment from my initial interest had primarily been development economics. So thinking about growth in four countries thinking about poverty alleviation, I ended up somewhat by chance in this environmental policy job, and since then, have been kind of putting the two of those things together.

AK: But that mesh, of course, is central to the research you've done. But it's super important, right? That is developing countries where the cost trade offs on the environment can be quite dramatic. And the impact on developing countries of climate change are going to end up being quite dramatic, right? So tell us a little bit more about the work you've been doing, especially in South America.

KM: Yeah. So I have really focused in on this environment development relationship. And as you say, part of the reason it's so important is because when people are working in agriculture, for example, or don't have the same level of savings to rely on, then they're much more vulnerable to environmental change. And the other reason is that the trade offs are much more stark, if you do have to give up some economic growth in order to reduce environmental degradation, then that matters a lot more if you're kind of on the edge of economic sustainability. And so my research has really focused in on that including a lot of work in, in recent years in Brazil, looking at deforestation in the Brazilian Amazon. But focusing in on what does that deforestation mean for people engaging in it? So small scale farmers clearing land for agriculture, and understanding both what are the benefits for these farmers? So what would they give up if we try and prevent this deforestation from occurring, for reasons that are important globally? But also, are there costs for the farmers themselves from environmental degradation that results from deforestation? So I'm really trying to quantify what happens locally. If we try and protect forests for the huge global benefits in terms of climate change, biodiversity and that kind of thing.

AK: Yeah. And of course, that exact question has an obverse, which is the what are the ways in which richer developing nations are actually offloading costs to developing nations? Right? So but your your model is, is let's zero in on the local motivations to see if we can kind of better understand them. Can

you think of examples that your research has really impacted shifts in policy?

KM: So one of the things I've been trying to do is really quantify what these global trade offs are. So kind of go from this, what are the local effects? To understand, for example, there's a drive to compensate, you know, so for payments from rich countries to poor countries, in return for avoiding deforestation. And so one of the areas that my work kind of feeds into is understanding well, how large do these payments need to be? What are people actually sacrificing in order to protect forests, and therefore the link with what's happening in rich countries and people's preferences for having these forests protected, is to understand if we're going to have some kind of compensation, or if we're going to have some kind of policy interventions, then how much finance would be needed? And then we can think about how those things might be financed as well.

AK: Got it. Yeah. And I think that the applied local work for our community is especially important for, you know, here we are Montana, there's a woods products industry here. You know, it's important for our community to hear these stories from around the globe of how you're working those through, what's the value of the international context for your teaching here?

KM: I think it's important for my students to have that international context, that it's easy to...I teach environmental economics, I also teach health economics. And it's easy to get very focused in on, you know, US environmental issues, US healthcare systems. And so I do think that it's beneficial for my students that I come with both an international perspective in terms of the topics that I'm interested in, and an international perspective in terms of my own knowledge and background and experiences.

AK: Yeah, I have to throw this in, because it's very funny, but you said that one of the things you would want to go back and redo is more languages, which I think is a good thing to say, in this context, as well that you know, that you've needed to pick up Spanish and Portuguese, because a local context you worked in, you know, require it, requires you to kind of interact locally.

KM: I wish I knew more like so I know, some Spanish I know, a little bit of Portuguese, but I wish it was stronger.

AK: Yeah. So that's a little urge to the undergrad and graduate student listeners out there, get your, get your languages down. And I think another funny thing you said, and I think it's really revealing and important. It's not funny, but you know, insightful, which is that you think personally, you might have ended up doing some of this exact work. Had you actually started from say biology, another field, because your interests in it are so eclectic. So talk a little bit about the importance of interdisciplinarity in the work you're doing, the teams that you work with, whether here on campus or internationally to kind of push this work forward.

KM: Yeah. So a big part of my work has always been working with people from other disciplines, to answer questions that none of us would be able to answer alone. And I think that's something that is being, the importance of it is being recognized more widely. It is a bit...

AK: But it's still a steep, steep hill to climb.

KM: It's a steep hill, certainly in economics, it's a slow process. But the kinds of questions that I've been able to think about are, for example, with my work in Brazil. Then at the moment, I'm working with hydrologists and climate scientists to understand how deforestation affects farmer wellbeing. And whether farmers are making decisions that might actually change the rate of deforestation to increase it or decrease it. And that's only possible if we can model what are the climate impacts of deforestation? What does that do to kind of flows of water through the landscape, neither of which are questions that I can answer. But then the question part of that that I can really address in detail is how do farmers respond? Because farmers don't just experience changes in water availability and then don't do anything about it. They will then make decisions to try and adapt to those changes, and so if it was only say, the hydrologist looking at this question, they might say, okay, well, farmers productivity will go down by this amount, because they'll have this much less water. But actually economists will come into that and think, maybe not, because what are the ways farmers can adapt? And how will that then affect the final outcomes?

AK: Yeah. And what are your teams? How do you make those connections? And how do you develop and build out those teams? Because I think, you know, one of the sort of lanes of Confluence is to stress interdisciplinary research and sort of demystify the process, talk a little bit about how these relationships unfold, and how you reach out to researchers and how you begin that collaboration process, which is, can be bumpy, right? It's never, never necessarily a smooth process.

KM: Yes, I mean, it's absolutely, it's a slow process. So a lot of these have been built up, mainly through meeting people, having initial conversations, then moving to perhaps very small projects. So for example, the hydrologist that I'm working with at the moment on this project I described, we did a smaller project first, and then that evolved into this larger project. And in fact, I have other collaboration, newer collaboration with public health researchers here at UM. And we're also answering questions where we're looking at, for example, health impacts of wildfire smoke.

AK: Yeah.

KM: And the piece that I can then bring to that is, how do people change their behavior in response to wildfire smoke, which might then affect what the final health outcomes are. And that collaboration came about, through initial conversations, just oh, we have common interests, we should meet with each other. A very small project. So one of my master's students, maybe five years ago, worked on a

project using some of the data from the public health researchers that they collected, where we could look at this kind of behavioral response question. And then that led to enough of a relationship that we could then put in a bigger proposal together. So it is that kind of initial conversations, small projects to try out the collaboration. And then using that as a basis for larger projects.

AK: Yeah. And you mentioned a graduate student's role in that. And, you know, we've talked to Teigan before. And she's kind of working on a similar kind of project, right, that is at the interface of vaccine uptake, and is sort of examining the motivations. And so, you know, you don't need to talk about that, because listeners can go listen to Teigan and talk about it, but I think that's a good example of how important graduate students are, that they are often the vector through which some new research projects might unfold. And we've heard that story multiple times on this podcast of the way a professor can be influenced in reverse by work that their graduate students are doing.

KM: Yeah. And in fact, that's one of my favorite ways to, yeah, try out new ideas or try out new collaborations is...often, professors are busy, and they think, oh, it'd be nice to work together, but don't necessarily get around to it. Whereas if you have a graduate student who's interested in some specific piece of intersection between fields, then yeah, that just gives it an impetus to actually make the collaboration happen. So definitely many cases where graduate student projects have helped contribute to this kind of longer term collaboration.

AK: Well, that's a natural segue to you know, another point of emphasis of the podcast, which is, you know, what are the attributes you're looking for in a good graduate student? What are what are, when you're looking at applications? What are the kinds of things you're trying to select for?

KM: So the main thing that is important to me is how students can think about applying the economic ideas, the theories and the methods that they learn about in class, to real problems. So when I'm looking at applications, then I'll want to see on their transcripts, that they have enough of an understanding of the math and of the conceptual material to make it through the coursework. But really, I'll want to see from their letter or from the kind of research or volunteering or work experiences that they describe that they have a sense of how these theoretical ideas can be applied and how they can be used to actually answer questions that matter to people.

AK: Yeah, and there's a certain amount of creativity involved with that, right, that certain amount of ability to kind of take this tool and move it into different domains and see how it functions in those different places.

KM: There really is, it's not an easy skill. So you'd think oh, well, you can just apply this to policy. But actually, it's something that's quite challenging to shift from, do I understand what's happening in this model? To? Yeah, using it in different ways and thinking about how it might be relevant.

AK: Yeah, I suspect you also have to be pretty quick in learning and taking in and absorbing new ideas, new information, because when you switch to that new domain, right, you've got to now learn a little hydrology, you know, a little...

KM: Yeah, absolutely.

AK: So you have to kind of maybe have a kind of general, an ability to do kind of a generalist intelligence.

KM: Yeah, yeah. No, I think an open mindedness is also important, you know, to think about, okay, here's some new concepts. What can we do with those?

AK: Yeah, and that that maybe defines kind of a problem in the field as a whole, that there's been some shifts in the field, that there's a lot of public conversation about economics, needing to kind of move away from some of its models, or at least adapt them more. And I'm being abstract about it. But you know, the rational actor model is one of the key ones. And across social sciences, there's a lot of debate about, you know, does that adequately reflect the nuances of human psychology? And so we have these adjacent disciplines, right, that have some claims on human behavior, psychology would be one, anthropology would be, evolutionary biology increasingly, how do you see that sort of playing out in the field of economics? That's a kind of methodological problem, and what are its impacts? And how people...I think it impacts your work, in other words, in the sense that you're, you are at root trying to understand and examine motivation, what motivates people.

KM: Yes. So I think when I'm, you know, I've always had a fairly open view of economics. And so, as well as thinking about yeah, here's this kind of fundamental neoclassical economic model, that assumes that everyone's trying to maximize their own well being and not considering other things, then that is a really valuable starting point, I don't think it stopped being a valuable starting point, because it can help us understand quite a lot of the world and quite a lot of how people behave. But I think what's really interesting is to then think about well, which are the cases where that doesn't apply? And then specifically, think about what other models can we bring in at that point? And sometimes it is, yeah, these kinds of behavioral psychology models. And certainly at the moment, I'm teaching a brand new health economics class. And a lot of it brings in behavioral economics, because the standard neoclassical model doesn't fit some of the things that people are doing in terms of health decision making. But the other way that we can kind of open up our thinking a little bit, is there's also other areas, other ways of approaching economics, like institutional economics, which instead of taking the context in which people are making decisions as fixed, opens up to thinking about, well, how do people's preferences affect the evolution of the formal or informal rules that govern what they choose to do?

AK: Yeah. And the cumulative effect on how to...

KM: How does that then have a feedback?

AK: Cumulative effect on institutions and how they're structured. Yeah, coming from people's value decisions. So it's not necessarily just taking them as given but thinking about how they actually evolved in the first place.

AK: Yeah.

KM: And that's really important when we're thinking about environmental questions, in particular, because what kind of institutions we have, what kind of regulations we have, really drives a lot of decision making that might have consequences for the environment.

AK: Fantastic. Well, we also like to hear your Montana story. How did you end up here at the University of Montana? We love your accent, of course, for one thing.

KM: So yeah, so my accent is, I started, I was living in England, and basically, the south of England, which is where I was kind of a mix of London, and then Cambridge is very crowded. And so once I finished grad school, then it just seemed appealing to be somewhere where there weren't quite as many people, which didn't lead me to Montana. It led me to other parts of the US. I spent some time in North Carolina and California. And people in Montana would think those sound like very crowded places. But when you come from the south of England, those are empty, you know, full of wild open spaces. And yeah, liked it enough to want to stay in the US if possible. So I was applying for permanent jobs. And as soon as I came to Missoula, I was like, okay, This is this is it, this is the right place. It really has the open space. Also the University of Montana, my department was full of great people, it still is. And the fact that there were all these people with really strong environmental research interests. So knowing that I wanted to do this kind of interdisciplinary environmental research, being in an environment where other people wanted that too, and where that was something that was valued, was really important to me.

AK: Yeah. And we refer to that, you know, I do at least as this sort of intellectual ecosystem, and that in this particular zone UM's incredible. I mean, people, you know, wildlife biology, and obviously, forestry, but also environmental studies. So across the campus thinking about these problems from multiple perspectives.

KM: Yeah, and that was really appealing as somebody coming into it, then that's really important to have that.

AK: You're not inventing in a vacuum.

KM: Yeah.

AK: We end every episode with our quick hitters short answer questions. You ready for them?

KM: Yeah.

AK: Okay. morning and night person?

KM: Morning, mostly because can't stay up late.

AK: So sunrise or sunset?

KM: I guess sunrise.

AK: Yeah, seems like it's an obvious, obviously follows. Western or eastern Montana?

KM: I haven't explored eastern Montana as much as I would like to have so I'm gonna have to say western.

AK: Okay. Yellowstone or Glacier?

KM: Glacier, but Yellowstone grows on me every time I go.

AK: Winter or summer?

KM: Absolutely summer.

AK: What is your favorite Montana River and why?

KM: I was thinking about this and I like Rattlesnake Creek. It's close. It's gorgeous.

AK: And it's at a confluence. It comes into our beautiful Clark Fork. That's my home creek too. Are you a Rattlesnake...?

KM: I am not.

AK: Okay, all right. What's your favorite Montana mountain range?

KM: The Beartooths are incredible.

AK: Yeah, they're kind of out there by themselves. What took you out there?

KM: I think a trip through Yellowstone and continuing on but it was just mind blowing.

AK: Yeah, they're pretty staggering. What's your favorite charismatic megafauna?

KM: Oh, I'm looking at these pictures of grizzlies and I'm not sure they are my favorite, but they're usually the most noticeable.

AK: Easy to go with them. Yeah. And of course, on brand with the mascot. If you had said bobcat, we would have just edited it out. What's one piece of music you'd be willing to listen to in all eternity and or just a long time?

KM: I could listen to a lot of Alison Krauss, Emmylou Harris. Yeah.

AK: Emmylou Harris. What a choice. How did you come across her work?

KM: I feel like I've been listening to her for a long time. I think it's one of those. You hear a song and it's just like, wow, okay, I need to hear more.

AK: Totally distinctive voice and just there's something so pure.

KM: I saw her live at the Wilma.

AK: Oh, wow.

KM: It was amazing.

AK: Fantastic. What's the last voice you hear in your head when you go to sleep at night?

KM: Feel like maybe my kids telling me stories?

AK: That's a good one. That's one to hang on to. Well, thank you so much for joining us on Confluence.
Katrina.

KM: Thank you. It's been great to be here.