The Taproot podcast
Season 4, Episode 2
Date: August 20, 2019
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Guest: Zen Faulkes
Transcribed by Joe Stormer

[Instrumental theme music]

Liz Haswell: Hello, and welcome back to The Taproot. This season we're talking about cultivating your career and our next few episodes are going to focus just on the decision whether or not to go to graduate school. I'm Liz Haswell.

Ivan Baxter: And I'm Ivan Baxter. Today's guest is international man of mystery (and science), Zen Faulkes. We discuss his recent paper on the common experience of resolving authorship disputes and then move on to the reasons behind what is know in some circles as *GRE Exit* or *GRExit*. For those not in the know, that means the removal of the GRE from graduation school applications.

Liz: Zen has thought a lot about how we do science and how we mentor. We have a really interesting discussion about the tradeoffs inherent in making these life-changing decisions based on a few likely-biased data points. If this topic interests you, listen on.

[Instrumental theme music]

Ivan: Alright, everyone, our guest today is Zen Faulkes. He is a biology professor at the University of Texas - Rio Grande Valley, where he studies the brain's evolution and behavior in crustaceans. Zen got his BS in psychology from Lethbridge, a PhD in biology from the University of Victoria, and then did postdoctoral research at McGill and Melbourne before starting his faculty job. In addition to doing science, Zen thinks and writes about *how* we do science – a topic near and dear to the Taproot heart. Zen writes the Better Posters blog which dispenses advice on how to improve the posters we present at meetings,

but Zen also thinks about some of the more complicated situations that we face in contemporary culture; that's what we have asked him here to talk about today. So Zen, welcome to The Taproot.

Zen Faulkes: It is a great pleasure to be here and I have to say that I want to thank you for that introduction, which is the nicest possible way of saying, "Zen doesn't study plants and Zen wastes a lot of time on the internet."

[Laughter]

Liz: Well, we were dancing around those topics a little bit.

Ivan: You are not the first non-plant person and so we've learned to hide our disdain for these things that have moving parts.

Liz: How you justify your research, I don't know.

Zen: I was going to say that I had a full defense about how plant-like one of the species I study is because it's a crayfish which reproduced asexually, it's polyploid, it's an invasive (spreads all over the place) but everybody thinks, "It's not that big of a problem because we can just eat them." So that's very plant-like, I think.

Liz: That does sound a lot like honeysuckle.

Zen: It's a weed.

Liz: [Laughs]

Zen: I study an animal weed, basically.

Liz: Right on. So the paper we're going to talk about today to kick off our conversation is called, "Resolving Authorship Disputes by Mediation and Arbitration," and it was published in 2018 in *Research Integrity and Peer Review*. So if you could just give us, Zen, a quick summary of the results from this paper and then we can talk about it further.

Zen: Absolutely! There's no results. There we go. We're done.

Liz: Alright, the *opinions*. The *contents*.

Zen: The opinion. The content. So the point of the paper is that we are in a situation where people are thinking about authorship all of the time. That is our bread and butter in academic research and surprisingly people don't really talk about it as much as they should. There's a couple of new papers that came out in the Journal of Science and Engineering Ethics which was talking about the fact that (and this is a quote) "researchers fear authorship discretions and often try to avoid openly discussing the situation". So when you do that, you have a situation which is ripe for conflict. There's tons of situations where there's conflict about this. The current thing that happens when authors get into a fight over a paper is nobody wants to step into that mess. Nobody wants to help. Nobody wants to do anything and I was sort of reacting to that fact that if you are stuck in an authorship dispute (particularly if you're an early-career researcher, a student, or anything like that), you might have literally no one to turn to and everybody wants to just kick it back to the court of the authors and say, "You guys work it out."

Liz: Yeah, there's just this huge leadership or oversight void.

Zen: Yes. And that sort of situation is incredibly corrosive and incredibly damaging to people and so what I wanted to do is to actually make a suggestion and as the title of the paper suggests I suggested that maybe we should really think of some way that we can incorporate dispute resolution into academic research/academic publishing, which is kind of common for other types of fields where there is shared intellectual property disputes. Quite often these things are not settled in court, but you can have an arbitration process or a mediation process because (as much as people sort of cringe about the concept of having an arbitrator or mediator getting into an authorship situation) I ask you this: do you really want to go to court? Do you really want to try to get a judge to settle an authorship dispute? I suspect that for most people the answer is *no*.

Ivan: I think that's one of the things that when we do our Responsible Conduct of Research training and talk through scenarios, there are always one or two scenarios that are about author order (author presence on the paper) so it's

clearly something that we worry about but it's also something (as you point out in the paper) that there are not clear rules for what does first author mean and what does last author mean and what is authorship on the paper mean in general. So it's a situations that is ripe for conflict, it sounds like.

Zen: Absolutely.

Liz: And exploitation.

Zen: One of the things that kind of surprised me when I was writing this paper (and I had seen estimated in a few different papers) is how common authorship disputes are. So there's three of us on this podcast, right? And I will say right now that I have never been in an authorship dispute. I have been fortunate because I hate people and I'm a hermit and I don't work on teams that I cannot feed with a pizza. But the odds are that one of the three of us would have been in an authorship dispute and it's not me. So, guys [sic], which of you has been in an authorship dispute?

Ivan: Raising my hand. On my first . . . it worked out very well but there was definitely my first first-author paper was originally a co-first-author paper and then I did 90% of the work and so eventually I said, "I kind of want to be the first author here," and the other person was willing. But yes. And I've had other times; they were all worked out I think fairly reasonably, well before submission though.

Zen: Which is good because that's what you want to have happen, right? You want to have those things resolved before the paper is submitted. I have seen cases where papers have just been retracted entirely from journals because people couldn't agree.

Liz: One of the things that I have really liked when I read this article of yours was this idea of academic authorship as a limited resources that people are scheming to get (consciously or unconsciously). It's limiting; it's the key to our success; and it has clear career consequences; and then it's also subject to these big power differentials so the most vulnerable people in a laboratory (which are

usually going to be the technicians or the undergraduates) are the ones with the least ability for them to advocated for themselves to get the authorship position that they want. I just hadn't really thought of it that way. I think it's really important for everyone to think about.

Ivan: It's also true that there are institutional rules that can limit them. My former employer, you had to go through a formal exemption process to get a technician to be an author on a paper. Even if they had done the work, you had to get that approved up the ladder.

Liz: Wow.

Zen: Yeah.

Ivan: I think that leads us to a point that we wanted to discuss with you and that is obviously the authorship of a manuscript as Liz said is limiting but it is also incredibly valuable for undergraduates who are thinking about going to grad school. It's something that you can have that maybe distinguished your application in the sea of applications. And the other thing that we wanted to talk about is one of those factors that is used in grad education (sort of fitting with our season theme of thinking about career stages and how you go on to the next step), and that's the concept of the *GRExit* (which is short of *GRE exit*). Lots of grad programs are starting to drop the GRE as a requirement for an application to their grad school or they're thinking about doing it. The reasons that they frequently talk about is that it doesn't predict "success" (and I'm going to put "success" in quotation marks because I'm not sure what that means).

Liz: Thank you.

Ivan: It disadvantages underrepresented groups and is expensive, so you have more barriers for entry. Lots of programs are dropping this and you actually had a letter published in Science addressing this and what it actually means for our scientific community. So maybe I'll leave the floor to you to sort of summarize that letter and then I have a ton of follow-up questions for you.

Zen: Okay. Well, you've already hit the introduction, which is about the

shortcomings of the GRE and why places are dropping it. But any action that you take when you're thinking about assessment always has unintended consequences. Always. I was just trying to point out that a lot of the things that people are touting as benefits to getting rid of the GRE, if you don't actually change how you think about the other things that you're using to assess students, you're not necessarily in a better place in terms of increasing your representation. So, for instance, okay so you take away the GRE. Then what are the things that you're looking at for assessment? The GRE tried to solve an important problem, which is that different universities are different. Different places have different standards, practices for grading so transcripts vary a lot.

Liz: But there's also gender and racial discrimination that is inherent in the GRE as well, right?

Zen: Yes. That has been documented many, many times.

Ivan: So just taking a grad application package apart: you start with GPA (and as you mentioned that can be different universities will grade on different scales and certainly privileged students who don't have to work have advantages spending study time and then people's biases in grading are well-documented and well-studied); and then there's letters of recommendation (another things that's considered).

Liz: God knows that's not subject to any kind of discrimination or bias.

Zen: Uhhhh, well, you know there's a word for that and it's called the *old boys network*. Okay, that's three words but, still, my point stands.

Ivan: And then there is an essay, usually, which has to be read and interpreted by humans who are known to be biased. I guess I have not served on a grad committee. I know, Zen, you were the head of a grad committee. What do you look for when you are reading an essay and when you're judging people

Zen: As horrible as this may sound (I think this is true any time you're looking at applications), what do you look at first? You look for the stupid typos and spelling mistakes because they demonstrate whether a person is fluent with the

language to some degree. Yes, that's a potential source of bias, but the other thing that I think it can demonstrate is that the person actually cares enough to get it right. Because when you're talking about an application letter and like a personal statement – it's not as though you're writing that under time pressure. It's not like, "Here, sit down, you've got fifteen minutes to write this." Right? People will make spelling mistakes and people will find those mistakes and so forth but if you can't be bothered to proofread a personal statement, I think that's one of the things that speaks to care.

Liz: This is something that our program is grappling with a little bit at the moment: who are we trying to recruit? What are we training them for? And how can we pick the kids that – the young adults, sorry – that have the personality traits that we're looking for using some sort of application process. I think there's a couple of interesting points. One is that nobody can really say that we should keep the GRE, right? It has to go. But one of the things that it did do was provide a sort of numerical evaluation that addressed some of these inequities that might come with a big-name school or a letter of recommendation from somebody that you might know. Maybe that might be overcome with a really excellent GRE score.

Zen: Exactly.

Liz: So what can we provide now that gives that type of grounded information about somebody's ability or background knowledge (I'm not sure those are two different things) that can dissociate from name recognition?

Zen: I think that when you're looking at this kind of question, I think that nothing in academia makes sense except in light of assessment and how awful it is. I think that this is the common thread between the two parts of this conversation, whether we're talking about authorship (like why do we care about authorship? Because that's how we're assessed). Why do we care about the GRE? Because that's how we're assessing our future colleagues, our students. In both cases, the underlying problem is assessment is horrible but we have to do it. We have to do it for transparency. We have to do it for accounting. We have to

do it because resources are not limited. I think everybody wants to be assessed in a detailed, nuanced way. As authors, we want everybody to read our damn papers. As students, we want a committee to read our personal statement. They want us to kind of look at the whole person – right – and not just a single score to toss out half the applications because there's too many applications.

Liz: But I still think even if we're assessing, what are we assessing for? And this kind of gets back to that quotations that Ivan put out there. What *is* success? What are we selecting students to do?

Zen: One of the things that we did in my program (and I think is fairly common for a lot of programs) is that we asked students in their personal statement to say something about their career goals. We have a masters program so we have a different set of objectives than a lot of other programs in other institutions. The goals can be different if you have a PhD program but that's clearly why I think we're getting at why we would ask students, "What are your career goals?" because to some degree that reflected the exact thing that you're thinking about. What do we want our students to do and how do we want them to be successful? If we have a student who says, "Uh, I dunno, I wanna just keep going to school," [chuckles] now that is not a student who at the moment you would say, "Ah, I dunno, that person may not have a clear goal but if that person gets in (especially at a masters-level program like ours), maybe that person by the end is going to have the experience of 'Yes, here's is what I realized I wanted to do in order to get out,'" so that student could actually be successful in the program.

Liz: I wanna be just like you.

Zen: Yes.

Ivan: And that student was me, except I had enough privilege and knowledge to know that I couldn't say that. I don't know if my essays were compelling, but they at least said, "Solve the great mysteries of molecular structure." I actually don't remember what I said but I certainly know that what I started doing is not what I'm doing now so there was no vision for . . .

Zen: And especially a lot of programs have rotations where tons of graduate students come in thinking that they're going to do one thing and find something else that is a different lab, different environment (whatever catches their interest), and they end up doing something completely different than they thought they were going to do in the first place.

Ivan: I guess one of the things that I think talking about goals is so important because some of this cynical view is we're looking for a brilliant person to come and work on projects that I'm interested in advancing for small amounts of money for five years. That probably should not be the goal, aspirationally. I would say that is not what anyone might say is the goal. I think a lot of times that first look at an applicant's CV, there is certainly some of that coloring your viewing of it (especially if it's somebody thinking about your lab).

Zen: Yes. And I think that it's reasonable to think that you wanna have somebody that you think is going to finish the program, who's not going to get through a semester and get bored. Honestly I have a confession here since we're talking about getting rid of the GRE, is that one of the first things that I did when I came in as a graduate program coordinator, is that I brought in the GRE. [Laughter] Throw all the stones you want at that. I am repenting now. But the reason is not so much because I thought that the GRE was a useful predictor (because it was never the primary tool that we use to sort applications anyway) but one of the reasons that I introduced the GRE was because it was (in my opinion) too easy for students to get into our program because we had situations where the day before classes students would come in to me and say, "Hey, can I be a grad student?" What, was there nothing good on television today? I wanted to include a little more friction in our application process because I didn't want students applying to our program because they didn't have anything else to do. I wanted to have something that was going to say, "Okay, look, this is something that I have planned; I have thought about; I have taken the steps to ensure that I'm going to get in," not "I just filled out an application one afternoon" sort of of situation. The GRE was one way to do that. As it turned out later, a lot of the

other problems with the ease of application were fixed and so that is one of the reasons why our department is going towards the other end of the spectrum now and we're not using the GRE (not that we used it a lot in the first place). But there's these kinds of considerations. As a program director when you're looking at your program and you're looking at the students that are coming in and you're seeing, "Okay, why are students not succeeding in the program?" Because they are coming in with no plan. So that was one of the reasons why we initially wanted to make it not impossible but a little harder for students to apply.

Ivan: So what did you do that is not GRE-based to make it harder and make them be more intentional about decision-making for your program?

Zen: That was primarily handled at the graduate office level by having a better application system. They included a low application fee. They started putting in a little bit more of a screening process.

Liz: I think this is the big question. If we boot the GRE out, what metrics are we replacing it with (since as we just covered, every other metric is also biased and flawed)? What are some –

Zen: Biased and flawed, but not entirely meaningless.

Liz: But we're still losing information, right? We're losing information so I guess I was wondering, you know, you wrote this great article about authorship and looked into other industries about how other industries go about mediating these problems – like the TV industry or comic book writing – and maybe model graduate admissions on those.

Zen: I think when you look at a lot of other industries, one of the other things that becomes a major part of the application process, I think, is the interview. Different places do interviews in one way or another differently. Some PhD programs in particular will fly students in for an interview; they will do that sort of thing. A lot of programs like mine, we don't have the ability to do that. We don't have the financial resources to fly students in for a masters program situation. But I think that you can get some of those kinds of things that you get from an

interview by being smarter about things like how you structure a personal statement. For instance, not just saying, "Write a personal statement," and maybe address career goals or something like that. But maybe structure it a little more. Maybe instead of asking them to write a single statement, maybe ask them to answer a structured set of questions about, "What do you think is exciting in our research field right now?" or just in science generally. "What are the kinds of things that excite you intellectually?"

Liz: Yeah, I like this idea because – you're right – it collects more information and it also gets rid of this sort of bias towards students who can run their application past a bunch of people for feedback or who have access to other applications or whose parents are in academia so they already totally get it. That sort of unwritten rulebook – we're basically providing the rulebook to the applicants. I like that.

Zen: Even include some of these kinds of questions. If you don't want to do the GRE, I think that you could still ask different kinds of questions to sort of get a sense of people's style, intellectual style. I know lots of businesses – for instance – they give applicants what is something called a Fermi problem. To explain a little bit, Enrico Fermi was a physicist and he was known for back-of-the-envelope calculations so these kinds of problems because known as Fermi problems. He was kind of infamous for going into his undergraduate physics class and saying, "How many piano tuners are there in Los Angeles? How could you estimate that?" A lot of businesses ask that kind of question –

Ivan: That is like a typical management consulting interview question.

Zen: Yeah! I actually read a book about Fermi problems and I got kind of fascinated with them because they really do give you all kinds of issues about how does someone approach solving a problem. Not necessarily that there is an exact right answer, but you can sort of get a sense of how does somebody work through a problem.

Liz: Yes, absolutely.

Zen: Not to say that we should be asking the piano tuner question necessarily, but just as sort of an example of if you structure an interview, make it so that this is the kind of interview that all of your applications are going to get. I think that it's quite revealing. I mean, we so phone interviews for our faculty positions and we actually have a standard set of questions that we ask people when we interview them. And again, even though we ask all the candidates the same questions, the answers (if you pick the right questions) can be very, very revealing about what people think about particular sorts of things and their kinds of interests and so forth.

Ivan: That's a very compelling argument. I do feel a little bit worried because I was just reading a Twitter thread by an African-American employee of Google talking about his attempts to diversify Google and conversations he was having with other Googlers where they were talking about how well Stanford people do on the Google interview and he said, "Well, it's because Stanford has a class on how to deal with a Google interview," [Laughter] which goes back to "there are no perfect metrics" but some may be better than others and can we incorporate more of those types of things into our process?

Zen: I think one of the other things (and I think, Liz, this is getting at what tangentially you were raising before) is what do we want our program to look like? In terms of when we want "success", there's sort of another level of that if you are committed to having an open, diverse, inclusive kind of graduate program, one of the things that places should seriously consider is just, alright, let's look around at the communities who we serve and let's try to mirror that. If we are in a community that is 50% women, let's look at our graduate program. Huh. It's 75% men. Maybe rather than just worrying about assessment or anything like that, let's just set a target.

Liz: Right. I am all about quotas, man. All about it.

Zen: Just today, the NIH director Francis Collins said, "Hey, everybody, I don't want to be on panels that are all men anymore." So that's one of the things that you value in a program. You do that.

Liz: Right. This is a value-added – the diversity of the people who we are training.

Zen: It's like, hey, you'd like more Hispanics or Latinx or whatever, you recruit those people and you put them in. Don't worry about the assessment. You just get them in because we know assessment is imperfect anyway, you know. So to some degree, you've gotta put your money where your mouth is on those kinds of issues and I know that I'm probably going to get people who will say, "It's a quota system and it's against excellence," and all these other sorts of things. I didn't say, "This is the only way"; I said, "Think about it." It's something to consider.

Ivan: I think that we have to get over the idea that a) that there is this standard of excellence that you can define.

Zen: Consistently, correctly, accurately.

Ivan: And b) that it has to be a trade-off of any time to say that we want a more diverse community that reflects our larger society and we want excellent science. Those are both quite valuable to take students that may not have all of the privileged advantages that we had, and you should be able to turn them into great scientists.

Zen: Absolutely.

Ivan: So then this has been superb. I don't think that we have sold everything [laughter] but I think that it's hopefully been a very enlightening conversation for both students who are thinking about grad school and those of us who are involved with grad programs. I would be remise in having you on the podcast and not having you at least tell us a little bit about your stupendously wonderfully awesome website that is BetterPosters.net or .com? I can't remember.

Zen: Just search, "Better Posters"; you'll find it.

Ivan: Okay. So tell us about Better Posters before we wrap up.

Zen: So Better Posters is a now decade-long-running blog (mostly weekly) in

which I talk about conference poster design (primarily) and other aspects of conferences and doing poster sessions and so forth. Mostly focused on design because (if I'm gonna be blunt) there's been a lot of ugly-ass posters that I've looked at over my career and I've made over my career and so I really wanted to defend against that. I'm currently trying to compile some of that knowledge into a book which will be able poster designs and sessions. That's the plug for the book and the blog. One of the things that has been sort of the mantra of the blog (which I think is again relevant to the issues we've been talking about today, with talking about assessment and so forth) is "better posters". It's not "perfect posters". It's about improving things. For many years one of my mantas has been, "Constant improvement is the scientific way." Constant improvement is the scientific way – that's how you get at these problems – not by getting at them all in one go but by chipping away at them little by little by little by little. And so the poster blog is one representation of that philosophy.

[Chuckles]

Ivan: I found Zen's site probably eight or nine years ago and I do feel that it has made my posters better. But it is good to hear the "Better" and not "Perfect" mantra because every time I made a poster quickly, I think, "Oh my god, if this ever made it onto Zen's site he would be just like ripping it apart."

Zen: I don't *rip apart*; I make *suggestions.*

Ivan: You do, you absolutely do. And I think it's a great process because one of the things you do is someone will send you their poster and you will make alterations to show how you could make it better and I think that's such an illuminating process for people. I really recommend the blog.

Zen: Thank you for that plug. Your check is in the mail.

Ivan: That's right. So with that, Zen, how can people reach you if they want to get in touch about authorship, if they want to talk about GRExit, if they want to talk about posters. What's the best way to get ahold of you?

Zen: Look, my name is Zen Faulkes. Do you think there's that many of me in

science? [Laughter] I am the easiest person IN THE WORLD to find.

Ivan: That's right. So that's "Faulkes". Zen Faulkes.

Zen: I am @DoctorZen on Twitter [makes a joke about *zee* versus *zed*]. I am also on DoctorZen.net is my homepage is where you can find links to blogs, papers, and other things that I have done over time.

Ivan: And Liz, how can people find you and get in contact?

Liz: I'm on Twitter. My handle is @EHaswell.

Ivan: And you can find me @BaxterTwi and you can find the podcast at @TaprootPodcast. And with that, Zen, thank you very much for a really good conversation.

Liz: Yeah, thanks, Zen.

Zen: Thanks for having me on. Anytime or anyplace, I'll be there for you guys [sic].

Liz: Awesome, thank you.

[Instrumental theme music]

Ivan: The Taproot is brought to you by the American Society of Plant Biologists and the Plantae website. It is cohosted and edited by Ivan Baxter and Liz Haswell, and produced by Mary Williams and Katie Rogers. We get editing help from ASPB Convirons scholar Juniper Kiss. We are very excited to have Joe Stormer help us out with transcripts. If you like this episode, tell your friends and colleagues and be sure to subscribe on Apple Podcasts or in your podcast player of choice. Thanks for listening, and we'll bring you another story behind the science next week.

[Instrumental theme music]