

Sadie Witkowski: Hi and welcome to Carry the Two! The podcast that pulls back the curtain to reveal the mathematics and statistics behind, well, everything! Normally my cohost, Ian Martin, would interject here with a witty retort. But we wanted to give him a break. So for this special interview with Cubs pitcher and University of Chicago math student Wilson Cunningham, we brought in an expert! Joining me to interview Wilson about math and baseball is sports reporter Jon (pronounce: ZA-GLUE-UL)! So without further ado, let's get to the interview!

[music interlude]

Wilson Cunningham: I'm Wilson Cunningham, I'm a second year at the college. I'm majoring in cam. So computational and applied mathematics. Something very new to me, but very interesting. I'm excited to see where it takes me. And I also play baseball, and I play a lot of baseball. So I kind of have a weird contract, or a unique deal that I have. So going into my summer, going into my first year at this at U Chicago, I was drafted by the cubs. And usually people drafted out of high school, you really give it like an ultimatum. So either you signed with the team, and you don't go to school at all, it is your full time job. Or you don't sign. So you don't play with the team and you go on and do whatever you're going to do at school, you keep playing at the college, you're going to whatnot, whatever. So going into the draft, they were aware that I really valued going to U Chicago, that was my plan that was something I really didn't want to miss out on. So they offered me the wonderful deal of, how about you do both. So I go to U Chicago full time. And while I'm there, I I'm on throwing programs, lifting programs, you know, nutrition, everything that the coaches and staff prescribes me. And when I'm not at school, spring break, summer, part of Christmas break. I'm over here in Arizona, or wherever they want me to be, playing.

Sadie Witkowski: That's an awesome deal. Man, how did you swing that?

Wilson Cunningham: Um, a lot of luck, really. It's definitely a dream come true. To me. It's absolutely the best, the best of both worlds. I'm just super happy that the way things unfolded.

Sadie Witkowski: Yeah, that's, that's awesome. And it's so cool that you get to still have that kind of classic college experience, even if you're probably on a much better nutrition plan than any freshman you'll ever meet at any college.

Wilson Cunningham: Absolutely.

Sadie Witkowski: So what made you interested in doing computational and applied math as your major?

Wilson Cunningham: Um, well, I've always been pretty drawn to math. You know, for as long as I can remember. You know, kindergarten, first grade, I remember enjoying math in school, which is, I don't know, if sometimes we're ready, sometimes not. But, you know, amongst other things that, you know, I've been pretty interested in a lot of subjects, a lot of hobbies and interests. I love to play the piano, I obviously love sports. So a whole bunch of things. But math was always the one thing I'm like, Yeah, I really love math. And the beautiful thing about it is that, you know, among all my other interests, maybe just because math is, you know, kind of number one in my mind. But I see math everywhere. You know, math is in art, math is in music. Math is a ton of math is in baseball, a lot of data, you know, in lifting and pitching, there's a lot of science to it. So going into school, I said, Okay, you know, I want to I want to stick with math. But I don't really know, baseball aside, I don't really know what I want to do with my future. I'm interested in a lot of things, but I love math. That's my number one. So I'm thinking, Okay, I'll do something with math, but I don't really want to maybe pigeon-hole myself somewhere. So I saw CAM as something that's a little more practical. There's a little more stats classes, a little more CS, this and that. So econometrics may be down the road, you know, things that can kind of branch me out a little bit. You know, and I know that, you know, any type of math I do, you know, I could go into any field really. I've heard that, you know, people like people like math, the thinkers that come out of math majors. So yeah, Cam cam spoke to me. It seems pretty cool. Pretty practical. And I'm excited to see where it takes me.

Sadie Witkowski: Yeah, that's a good way to say like, Okay, well, I'm interested in this field. Now, where can I actually apply it besides just you know, Algebra Two or something? So were you always good at math? Or did you like struggle?

Wilson Cunningham: I'd say that math always came decently easy to me. But not, you know, math, math is hard. Even, even even if, you know, some people grasp it a little more than others, this and that. I think the real thing is that I've just been interested in it. So, you know, when I see a problem, that's, that's harder than others, I can sit there. And, you know, I have, I enjoy sitting there and staring at it for, you know, 10, 20, 30 minutes, hours at a time and, and, you know, when I'm walking to classes, you know, it's in the back of my mind, oh, how am I going to do that? So I think that's kind of I attribute that to some of my success in math, but since going to school here, oh, man, it's gotten a lot harder. It's definitely a challenge. But it's, it's very, very rewarding.

Sadie Witkowski: So do you think very much about or think often, about how math and baseball are still related to each other? Or I guess it's more statistics than math? Maybe? Technically?

Wilson Cunningham: Well, yeah, you're probably right, more statistics. But it definitely plays it plays a big role. I mean, in the lifting side of things, you know, our strength and conditioning

coaches here. They're on the computers coding in R. Doing all these programs about, you know, we input our the, the weight we do every day, and this and that, and blah, blah, and our weight, and they have these ways of measuring our strength and our power throughout the week throughout the month, this and that. And so they compile all that data and see where you're at, see how you've improved and everything. I mean, just the other day I went in, and I said, Oh, hey, John, just curious, how are my jumps looking from a year ago. So he pulls up all the data, oh your jumps were this, your hamstring strength was this, blah, blah. So they have it all there. And on the pitching side of things, I mean, just you know, recently in the past couple years, with the advent of cheaper high speed cameras that are available to a lot of people and technology to measure spin rate and velocity down to a tee. There's all there. Also, you know, every time I throw a bullpen every time, we have a pitching lab here, you know, all of that data is compiled as well to really see my progress. And to fine tune it, they call it pitch design. So they see my fastball. When I came in my fastball had a lot of run to the side. So I throw it and it would curve to the left curve away from a righty batter and it would sink a little bit and they say, Okay, we want your fastball to have more carry. So that means it's a true or fastball is straight, and has a more true backspin. So that it has that rising effect. So with the high speed cameras with the the machinery, they have to see everything, see the spin and everything, you know, they're able to fine tune, okay, you need to rotate the ball this much in your hand and do this and think throwing up your middle finger instead of your pointer finger. And they're able to fine tune things to get that outcome.

Sadie Witkowski: Do you get a lot of like, instantaneous feedback on this?

Wilson Cunningham: Typically it'll be you know, I'll throw, you know, 30 pitches in a side session. You know, they call it bullpen. And then maybe the next day or afterward, they'll come back and say, Oh, this is what you need to work on. I mean, they do have the ability.. I throw a pitch. And one second later, they can look on the iPad and say you had seven inches of horizontal break and you had 12 inches of vertical break. We want you to be at six and 14, you know, something like that. Try to do this next time. So it can be instantaneous, which is fascinating. It's amazing.

Sadie Witkowski: That's incredible how much technology has changed the game. Not that like baseball has historically been all about the stats and recognizing you know, individual unique player stats and how they are going to match up on a team but now even more so we have such richer datasets to work with. You can really get that kind of fine grain information.

Jon Zaghloul: Is uh, baseball becoming a little bit too technology based though Wilson, do you? Do you think there's still a part of it that has to do with the human element that there's a value for it in the game today?

Wilson Cunningham: Yeah, there, there definitely needs to be a balance. You know, with with the whole Moneyball era? sabermetrics, there definitely is a ton of merit to the fact that you can use... you can compile data and see, okay, this guy has better stats than this guy, this and that. there's so many other factors, you know, the way what type of coaching style works best with a, with a player? How are they going to react to adversity, you know, how are they going to get along with their teammates? Are they going to get into trouble outside of games and everything? So there's so many other things that require a little, little human feel, and less computer knowledge? So, absolutely, there needs to be a balance.

Jon Zaghloul: What about mechanically speaking to how analytics, change the way you throw a baseball motion wise and windup bots.

Wilson Cunningham: Um, so actually, recently, I've made a lot of changes, beneficial changes to my mechanics, which actually started in high school where I started making big, big changes. And the way that actually we were, my pitching coach at the time, he and I were able to see what I needed to change is, you know, obviously, with the human eye, you can see certain things so you can, if you're, if you've been coaching forever, if you play baseball forever, you can see someone throw a ball and say, Oh, that's not quite right. But when he gets it on slow motion camera, and you can really see, okay, hey, your hips are opening just too early, and you're getting just not enough external rotation on your shoulder this and that, you're able to see more. So actually, what I did in high school with my pitching coach, is we did a, he calls it a bio test. And so sets up a slow motion camera gets it all zeroed and scaled. And I just throw some pitches. And then it, sends it off to a really smart guy somewhere on a computer who looks at it. And, you know, it gives you a little skeleton, and so takes everything away, you see my skeleton, and there you can see, okay, you know, your front hip has this much external or internal rotation, your knee flexion is this much blah, blah, blah. And, you know, it shows the timing and the velocity of each of your levers. And so the way it works, they call it like your, your kinetic chain. So what was happening with me is my plant leg, my right leg. So I'm a lefty pitcher, my plant leg, I was landing, there's a little bit of external rotation in my hip. So my knee would jump out a little bit. So it kind of be a little soft, a soft landing a little bit. And so what happens though, is so you land on your front foot, and then you, say you what you want a really stable front leg, and then your hips turn into that, while your shoulders haven't turned yet. So your hips turn, and then your shoulders turn, and all the while your arm is still back. And then finally, finally, your arm goes. And then at the last second, your hand goes. So it's this big ol sequence of movements. And the human eye can only see so much. So this technology, you know, it helps me to say, Okay, you want your front leg to be a little more stable, because when it's not stable. All that force is being dissipated elsewhere. And you're not able to put all that energy eventually into your hand speed.

Sadie Witkowski: It's an entire body acting as a whip just to release the ball correctly.

Wilson Cunningham: Yeah, absolutely. Yeah, yeah.

Jon Zaghloul: What have you done to increase your velocity? I would assume by using these programs, you found ways to go up from topping out at 85 to now 90 Last time I checked, right?

Wilson Cunningham: Yeah, yeah. So before I made all those big changes in high school, yeah, I had a lot of mechanical issues. So the first thing I did was I fixed that front leg a little bit and made it a little more stable, right. And part of part of all this is that actually I need to be stronger. To have a more stable front leg, you gotta have a stronger leg. So you know, in the past year, I've gained you know, when I got to the complex after the draft, I was coming off of an injury. So you know, maybe I was a little down in weight, but I was around 180-185 And now I'm around 210-215. So I've put on a lot of weight, which definitely is extremely beneficial. I think my, um, my growth height wise, is shrinking a little bit. So my body has been maturing, I'm able to put on a little more mass and get a lot stronger, which I have. So that's been a huge contributor. But back to the mechanics. Yeah. So the front leg, you know, that was a big fix, as well as my arm action. So what was happening is that, like I said, at the end of your throw your arm is supposed to stay back, stay back. And you get this, they call it lay back in your arm. So your are your shoulder externally rotating, which through what was happening is I was, I wasn't letting that happen. I wasn't letting my arm just kind of track along for the ride be loosey goosey and whip through. Instead, I was tensing it up, and I was letting my shoulder my elbow track in front of my shoulder, and I was kind of pushing the ball not getting that whip. And so with that fix, oh my gosh, that was that was the biggest fix. I mean, I went up, I couldn't tell you know the exact numbers, but I went up a few miles an hour, just from that fix, which took I mean, I had the muscle memory from years and years of throwing that way ingrained in my body. You know, so it took some persistence, some some little funny drills that my pitching coach conjured up, but it worked a lot. And so yeah, those things really helped.

Jon Zaghloul: Is it ever discouraging to you I mean, you're not a robot, and you're coach is telling you, hey, you know, you're a couple of inches off here, you're a couple of inches off, there's never discouraging to hear him say that, and then take all this time to try and make an improvement because you're not a robot, you're human, and you're trying to learn this at your pace, does the technology that come with it, or that comes with it, you know, discourage you a bit.

Wilson Cunningham: I mean, some of the information, all of the information that is available to us, it can be too much. Yeah. And if I'm playing catch, if I'm pitching, doing anything, and I'm thinking about, okay, I need this amount of external rotation on my hip, and I need this amount of lay back, and I need to wait just this much time and my hand speeds a little slow. So I got to

think, you know, let the ball roll out of my fingers better, you know, whatever it is, I'm thinking all those things, which is actually a big problem I used to have, you're not gonna you're gonna freeze up. It's like paralysis by analysis, you're gonna be trying, right? You're gonna be trying to throw, you're facing a batter. But you forget the batter's there, because you're thinking about eight different things. So, you know, one thing I had to do, this was a big fix I had to make, you know, baseball is hugely, hugely mental, especially pitching. And so you got to focus on one or two things at a time.

Jon Zaghloul: What's your best pitch?

Wilson Cunningham: I would say I'd say my fastball. I've changed it a lot recently. Like I said, you know I kind of used to throw sinkers and now it's more true fastball. But I found you know, even here and in the innings I pitched here at ACL as well as live at bats, officials, you know other people in the Cubs organization. It gets a lot of whips, so a lot of swings and misses. I don't know what it is about it specifically. But it works so I like it.

[AD BREAK]

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[MUSIC]

Jon Zaghloul: Do you see yourself going down that path? Maybe? Would that be an easier way for you to be called up eventually to be a left handed specialist at the major league level? Are you more interested in starting pitcher?

Wilson Cunningham: Um, I am projected to be a starter. That's the plan. But who knows what will happen between now and then. You know, I'd love to be a starter. But whatever works, whatever it gets me there, I'm open to.

Sadie Witkowski: Well, I do you want to ask so you spent some time playing with other folks like in the Cubs program? Are there other math and stats nerds? Like, are you guys comparing numbers over lunch? Like how does that work?

Wilson Cunningham: Um, I'd say that. Mostly everyone, I mean, especially the pitchers are pretty, pretty into the fine tuning of pitching and what comes with that. So you have to have some understanding of physics and biomechanics, or whatever comes with it. So, you know, we'll be having conversations at lunch, and it's just complete baseball jargon. And it's funny

that you asked that because you know, people have asked me that before. And they say oh, like you always talk about all these fine tuning things is pitch design, blah, blah blah like are other people like that too? Oh, absolutely. I mean everyone is.

Sadie Witkowski: It's like the opposite of the like big dumb jock. You're like, no, no, we're all trying to figure out the biophysics.

Wilson Cunningham: Oh, absolutely. Absolutely. Yeah.

Jon Zaghloul: How'd you get into baseball from the beginning?

Wilson Cunningham: Um, well, I've played since I was four or five years old, you know, whatever T ball started. And, you know, I fell in love with it. I loved it as a kid, you know, wait, so I played a little league until I was about nine or 10 years old and moved on to travel ball, wanted something a little more competitive. And then up through middle school, though. I was I was growing a lot, you know, for reference, I'm six eight now. And in seventh, eighth grade, I was probably 5'8", 5'6". So I was growing like a weed. And with that I was getting hurt all the time. And this and that. And I was playing for a pretty competitive team. For 12 year old, a 10 year old, I felt like I didn't have too much free time, blah, blah. So I started to get a little burnt out, you know, a combination of all those things. So actually, my freshman and my sophomore year of high school, I didn't even play baseball. I ran track, I played volleyball, played golf, tried a whole bunch of things. In through that I realized I was like, dang, I actually really love baseball. And just the fact that I was I kept getting hurt, and all these other factors that were going on, made me think I didn't like the sport, but I love it. I miss it. And so, junior year, I knew a bunch of people on the baseball team. I remember sitting in Spanish class with Colin and Luke on the baseball team. And they were telling me like, man, you gotta just gotta just trial join the team. So you know, it goes like, what's gonna hurt? I'm like, okay, you know, why not? So went and saw my old pitching coach kind of got into the groove again. And you know, the rest is history. Very glad I came back to it.

Jon Zaghloul: But what I find interesting, too, is that you were going for two years, you'd come back and you kind of didn't miss a beat. I read an article about you, you were still growing mid 80s coming back after two years. That's kind of unprecedented. You don't hear about that too much.

Wilson Cunningham: Well, there definitely was a it was a learning curve. My junior year, it was well as my senior year, I didn't get too much playing time. I went to a pretty competitive baseball High School. And, you know, product of that is I got tons of exposure. That's how I saw so many scouts. But yeah, there definitely was a learning curve. There were a lot of the kinks in my mechanics. And a lot of, you know, competitive hours that I missed out on that I

had to I had to bounce back from. But, but yeah, somehow, you know, within a handful of months, you know, a year this and that I was, you know, topping out in high school at 88-87, you know, sitting mid 80s. And then since then, you know, I've made a lot of progress. Now. I'm sitting, you know, when I'm pitching, I'm sitting 89-90 and I hit 91. So I've got, you know, they say I have a high ceiling, you know, right now, you know, I look at my mechanics and I say okay, I could get into my legs a lot more. I'm also still a pretty lanky guy I could put on 10, 20, 30 pounds so there's there's a high ceiling I feel like there's a lot of progress I could still make.

Sadie Witkowski: I appreciate that you're like I want to put on the additional weight in college and it's like not what most students think about 15 pounds like No,

Wilson Cunningham: yeah, the freshman 30 for me.

Sadie Witkowski: Um, well, I wanted to ask a few questions going back to your experience at U Chicago so I know you're a cam student, computational and applied math. (30:33) You're already balancing time between classes and training and weightlifting and games. So like, how are you managing all of this? Do you just never sleep? Like, how does that happen?

Wilson Cunningham: I sleep a lot. In high school, in high school, I didn't sleep, I'll be honest, I did not sleep, and I'd wake up. And I wake up at 515 in the morning and lift at six in Costa Mesa, which is 20 minutes away. And this and that, and I don't think I got too much out of it, because I wasn't sleeping. So I got to school, I was like, man, like, I really need to sleep more, this is a huge priority of mine. So yeah, it has been a huge priority. So there are times, you know, I gotta really hunker down and get my work done. And I gotta get my throwing in, I got to get my lifting in this and that. So I can get enough sleep. And so I mean, with any sort of time management, you know, especially for U Chicago students, all of us, we have to sacrifice something, you know, so maybe some social life here and there. And, you know, whatever it be, you know, I gotta find a way to balance it all. But I think, you know, my first quarter, it was a, it was tough adjusting. When they say that U Chicago is a hard school. It's no joke. It's legit. So, you know, I'm taking my classes and doing all the baseball stuff. And at that point, I hadn't even been throwing, you know, I was shut down. And so I was, I was pretty overwhelmed. Wow, this is so hard. This is a lot of stuff. And finally, second quarter, third quarter, I kind of started to figure things out, kind of started to figure out okay, when I'm doing my homework, I really shouldn't have my phone right next to me, I shouldn't do it, you know, with all these friends and blah, blah, blah. I'm not being efficient. And so you know, I found a little things here and there to be a little more efficient, get get all the stuff in so I can still sleep.

Sadie Witkowski: Yeah, sleep, practice, learn: all the basics. Try to socialize at some point. Yeah, yeah. So you mentioned that you really wanted to go to U Chicago? Why? Why U Chicago in specific?

Wilson Cunningham: Yeah, I mean, like I said, I have a lot of interests. A lot of academic interests. You know, I know I love math. But I also love history, also love physics, and biology and even English. And so there are a lot of things that I was into. But I didn't know, I didn't want to pick just one. I didn't want to have to go down one specific planned route. And so U Chicago, they have the core curriculum. They have all these crazy cool classes. And with the quarter system, you can take a bajillion classes by the time you're done. And so the whole format of things they have here and it was something that seems really fit me. So that's that's what drew me to it.

Jon Zaghloul: How cool is it to to see U Chicago and the Cubs kind of collaborate in your situation and come together and allow you to pursue two separate interests at the same time.

Wilson Cunningham: Oh, yeah, it's it's, it's wonderful. And I'm nothing but grateful for everyone involved with the Cubs letting me do this and U Chicago letting me use their facilities and learn all the things I'm learning and this is that it's definitely a big operation.

Sadie Witkowski: So I gotta ask when you're, when you're done with your degree after you graduate, are you thinking academics? Are you thinking professional baseball, you're thinking all of them, it sounds like

Wilson Cunningham: well, the plan is the plan is as of right now is I'll finish. I will finish four years here. And keep the same schedule as I go. You know, summer, spring break, Christmas break. I'm here in Arizona or wherever they want me to be. And while I'm at school, I still keep up with all this stuff. And then after the four years the plan is right now is full time baseball for however long it is to, you know, see where I go see where it takes me. Obviously, the end goal is go to the MLB. But, you know if I get some devastating injury if after many, many years, you know, nothing seems to work out I'm not getting anywhere. You know, I still have this wonderful education in my back pocket.

Jon Zaghloul: Who's the one player in Major League Baseball you really want to face?

Wilson Cunningham: Oh, well, I grew up in angels fan. So. So Mike Trout?

Jon Zaghloul: Okay, Mike Trout. He's a very good answer. Do you think you'd strike them out? Or are you a little bit nervous? I mean, it's Mike Trout is one of the best players on the planet.

Wilson Cunningham: Um, I don't know. I don't know he doesn't see a lot of a lot of six eight lefties? Maybe I could do some with that. But hoping I'd strike him out.

Jon Zaghloul: Well, I'm looking forward personally as a baseball guy and as a sports guy to watching your career develop and hopefully we'll see you one day on the Cubs or on another major league team down the road.

Wilson Cunningham: Ya know, I'm definitely excited to see where this takes me. And you know if I, if I keep up the hard work where I can take myself but yeah, I'm really excited for the future.

Sadie Witkowski: Awesome. Well, thank you so much for joining us on carry the two and this has been great.

Wilson Cunningham: Well, thank you for having me. Thanks for hosting me. I appreciate all the questions.

[music break]

Sadie Witkowski: As always, don't forget to check out our show notes in the podcast description for more about Wilson's experience with the Cubs and links to Jon's other reporting projects.

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