Geoff Wodtke: Hello, and welcome to the Inequality Podcast. I'm Geoff Wodtke. Today, I'm excited to be joined by one of my colleagues, Stephen Raudenbush, the Lewis-Sebring Distinguished Service Professor of Sociology here at the University of Chicago. Steve is one of the most influential sociologists alive, I think. His work spans a pretty extraordinary range of topics from pioneering methodological advances in hierarchical linear models and causal inference to landmark studies of neighborhood poverty and violent crime, as well as our focus today on the role of schools in mitigating inequality. So much of Steve's research has centered on school reforms designed to raise the achievement of disadvantaged students and close gaps with their more advantaged peers. He has written extensively on these issues, including his recent book, The Ambitious Elementary School, which examines the experience of several charter schools in Chicago, as well as in several influential studies of innovative approaches to teaching algebra in city high schools. So these topics are central to understanding contemporary social stratification and mobility in the U.S. and on a personal note, Steve's work has been enormously influential for my own thinking, so it's a real pleasure to welcome him to the podcast. Steve, thanks so much for joining us.

Stephen Raudenbush: Thanks so much for having me and it's really fun to be in the same room with you. I've been following your research very closely and we have a lot in common, so.

Geoff: On the podcast, I talked with Doug Downey from Ohio State, who we both know pretty well. We talked a lot about whether schools are an important source of achievement disparities between students from high and low income families or from different racial backgrounds. And he argued that schools may not cause achievement disparities so much as merely channel inequalities generated by factors outside of schools. So I'm curious what you think about this question. How do you see schools roll in generating the achievement gaps that we observe in this country?

Stephen: Yeah, I think we should take a historical perspective on this. If you look at the deep south, back in the 30s and 40s, you'll find for many black people, the kids would, in many cases, not have a school. There was a big movement to create schools in the 20s, the 30s and the 40s. The Rosenwald schools are a good example of that. Thousands of schools where kids literally had no school. And in the south, when where there were schools, they tended to be open for six months of the year and white kids would go for nine months of the year. In a lot of rural areas, the black schools only went to eighth grade. The white schools went to 12th grade. So it's pretty hard to go to college if you only, if you quit school in eighth grade. So obviously there's tremendous disparities in opportunity going back in those days. It's really important to see that historically. If we look at urban high schools, the industrial

model, I guess you could say of the comprehensive urban high school was rigid. Working class boys would be in the vocational track and they would take courses in woodworking and electricity and carpentry and printing, metal work. For girls, the more common track was called the general track, which really focused on sewing, cooking, typing, home economics.

Geoff: Home economics.

Stephen: A very small fraction were being trained or prepared for college. And really a very small segment of the population went to college. And those tended to be people who were from more educated households and more affluent families. So we saw, so you can see tremendous disparities in the experience. In the first case, between schools with the black kids and to some large extent, say in the public high schools back in the industrial model back in the 40s, 50s and 60s and 70s, within school stratification. So things have really changed. There's been a movement, a big fight to try to make schooling more equal. Even in the south, the southern schools to try to defend against integration, they wanted to make the argument of separate, but equal. So there was some attempt to make things a little bit more equal. And since the civil rights movement and the founding of the Elementary and Secondary Education Act in 1965 and the President Johnson's regime, there's been a progressively increasing tendency to try to do away with the tracking system that I met in the urban sector. So where we are now is different. So sorry, it's kind of long winded.

Geoff: But it sounds like it may have been a ill-posed question. And that things have changed a great deal over time. And that the answer could vary quite a bit depending on like the historical period that we zoom in on.

Stephen: Absolutely. That's it. And the movement really was a movement for academics for all. So gross differences between school experiences are probably much less than they used to be. But how you pose this question about whether schools are creating inequality or whether they're compensating for differences that kids bring to school really depends on the counterfactual. So my favorite counterfactual is no school–comparing kids who are in school and kids who are not in school. I have a chapter in the Annual Review of Sociology in 2015 where my main argument is that at early ages in particular, more disadvantaged kids, kids of lower socioeconomic status benefit more from going to school than do rich kids or upper middle class kids. And the argument there is that in terms of academic learning–I'm not talking about what kids learn at home in terms of being good people, having good values. But just in terms of academic instruction, families vary enormously in their capacity to do that. Parents who haven't had a lot of formal education or who maybe speak non-academic kinds of language won't be as effective at teaching academics, academic

language to their children as people who've had a lot of schooling and who speak the language of instruction.

Geoff: I mean to push it even further, right like, probably the variability among parents and their capacity to help their middle schooler through algebra is far greater than the variability of teachers in middle school in their capacity.

Stephen: Yes, you have to know algebra before you can really help somebody and huge..and the people, many of the parents grew up, you know, during the time I was mentioning, in fact, where educational opportunities were very limited for lots and lots of people. So the argument there is that if you compare the academic instruction that a child would get at school compared to getting it at home, the gap is much bigger for kids whose parents have very little education. So in 15 studies that I reviewed in that chapter on universal pre-K around the world, you see in societies where you start school at five kindergarten, there was a reform to start school at four or even earlier. And this just happened in eight different countries all over the world and the results are very, very consistent. The kids who benefit in terms of academic learning from this are the most disadvantaged kids. And it makes perfect sense if my father is a professor, if my mother is a lawyer or something and I go to a preschool, it's very unlikely that the preschool teachers are going to have a richer academic language than my parents. But if I come from a home where I speak a dialect where there's very little academic English, then I'm going to be exposed to this kind of instruction, maybe informally, but very powerfully and kids are a great language learner. And so I'm going to make bigger gains from going from home to school. If I'm a low-income kid whose parents don't have much education, than if I'm a higher-income kid whose parents have a high level of education. And this, I know you mentioned Doug Downey. Doug Downey has looked at this in the elementary years as well, so the preschool years. In that chapter I talk about Doug Downey's research and try to trace this across the life course.

Geoff: Whether schools sort of do or do not cause inequality at some particular point in historical time, that's kind of a separate question from whether schools can be modified or intervened upon to reduce inequality or improve achievements or other outcomes for particular groups of students. So I wanted to shift the discussion towards schools as sites where interventions might be able to make a difference for disadvantaged students. So based on your research, what kinds of interventions have been the most effective at boosting student achievement?

Stephen: Again, it's going to depend on where you are in the life course. Probably the most celebrated period of the life course in answering your question is early childhood. There's been some very famous rigorous experiments where kids were randomly assigned, very

disadvantaged kids were randomly assigned to have a fairly coherent academic curriculum in preschool with remarkable effects across the life course. There are many studies of early childhood. And I'll say something about some recent work that our group at Chicago has been carrying out, this includes Susan Levine, Susan Golden Meadow, Janet Sorcan and Debbie Leslie and Alana Foley and others where what we did was we taught teachers, meaning not me, but people who know how to teach really well, taught teachers how to assess the mathematical skills of their little kids. And here we're talking about things like do you know the count list? Can you say one, two, three, four, five, that kind of stuff? Do you know one-to-one counting? If you hold your fingers up, can you do go one, two, three, four, just enumerating each object in a set? And if–do you know that the last object that you enumerated is the set size? Can you compare and set sizes? Do you have an algorithm in your mind that if you are given different puppets who are holding marbles or something, can you say which puppet has more marbles and that involves counting and understanding this cardinality principle? And then can you conduct operations on sets? Can you say if this puppet had two more marbles, how many marbles would that puppet have or if you took two away? So kids learn this at very different ages as a function of their exposure to these ideas. But learning these things sets you up to do well in school. And the teachers who–and by the way, the preschool teachers tend to be very have low pay, not very much training–discovered that they could be very effective at teaching their kids by assessing their kids using procedures from developmental psychology to assess their kids' skills. And they could see which kids needed which kinds of instruction. And we had a study that we published in the Proceedings of National Academy of Science a couple of years ago where the effects of this were quite remarkable. And the experimental design, quite about a hundred teachers in about 50 classrooms. We've now replicated this study in a wider range of different kinds of settings. We get almost exactly the same result. So the results seem to– don't seem to depend on your ethnic or language background, or well, you have to know English. You have to know enough English to be able to participate. But rural versus urban, being in head start versus not being head start. The effects are very, very similar.

Geoff: And so it sounds like maybe the general principle to take from that study is that it's like to improve the skills of lower income students, it's sort of crucial to understand where they're starting or the skills that they're showing up at school with. And then tailor the instruction to that level. And in a lot of schools, maybe the teachers aren't particularly well equipped to understand where students are starting, especially when they're little and when it's hard to figure out what little kids actually know.

Stephen: Exactly. That's exactly right. The first thing is just knowing what is the trajectory of skills. In numerical reasoning, it's very clear what this is. The science is quite coherent and pretty much definitive about what kids learn, how kids learn the numerical side of things.

The spatial reasoning is a little more complicated where people are doing a lot of work on that. But you're right. And this idea that you would assess children and then you would take the kinds of actions that a child needs to go to the next level and then assess and then figure out what the next thing to do is, we think, a very powerful idea. And where I got that idea from was, you mentioned the Ambitious Elementary School, because in that book, we studied how a couple of charter schools that run by the University of Chicago organized actually literacy instruction. And they used this principle. They organized the school around iteratively assessing and teaching literacy skills in learning to read. And there's–in reading, there's a pretty well established scientific understanding of what you need to do. You need to, first of all, this is something that people, people miss a lot. Is that children need a rich vocabulary and they need concepts and they need language they can use to relate concepts to each other and talk about propositions and talk about ideas before they need to learn how to decode text. But they do need to learn how to decode text. We have the science of reading. And there's been a bunch of studies that show that when you use scientific methods of teaching reading, it really makes a difference. And so then you learn how to decode text. You're learning that the words that you know orally have a representation in text and you can map the representation of words you actually know into the text. And that's called decoding, which is essential. But it's only going to have a big effect over the long run if you then use those tools to encounter texts that for purpose of learning from reading. In other words, some people call it reading to learn, which is different from learning to read. And so that's where then what kicks in is that vocabulary and that conceptual knowledge that you got when you were a little. So this is pretty well developed theory. There's a lot of studies that show that children do learn that way. And that was sort of the basic foundation of the Ambitious Elementary School. And the question then is if you want to do that, how do you organize a school to make that happen? And how do you organize a school so that you can cope with the enormous heterogeneity of kids with their background, their literacy backgrounds and language backgrounds. And that's a huge task that all schools have to face.

Geoff: So you mentioned sort of intensive early childhood, education, accurate assessment of children's skills when they come into school and then tailoring instruction to that level, decoding and then navigating the transition from learning to read with decoding to reading to learn and comprehension as all kind of essential sort of targets or reforms that schools could orient themselves around to boost achievement for disadvantaged students. And then you sort of alluded to at the end of your comments that actually implementing those holistically inside like a single school, say serving a disadvantaged population of children can be quite challenging and requires a kind of a total overhaul of just the organizational structure, the incentives. And you know, a big part of

your book, the Ambitious Elementary School is like how the school had to navigate that. So I'm, I mean, can you tell us a little bit about those changes to organization, changes to incentives, changes to communication, you know, between teachers, between teachers and parents and so forth.

Stephen: Yeah, so I'm really glad you asked that question because it shows you're bringing sociology into play because a lot of what I've been saying has it's kind of a developmental psychology orientation educational psychology, but here's where the sociological side comes in big time because and I learned this a lot of this from Brian Rowan, my colleague, Michigan. Rowan would always say that how you manage work in a work setting depends on the work itself and what the work is and what kinds of–how much uncertainty there is about the work the tasks. You know, if you're working on an assembly line and you learn how to do some a very repetitive operation. That's very different from if you're a teacher trying to figure out what kids know and don't know and what to do next. So work where there's uncertainty, where there's a lot of task variety requires a different kind of management and generally speaking, I think Brian when we just kind of looked across a lot of occupations would say the management has to be appropriate to coordinate and support the work and our schools have not been organized to support the work that I just was talking about. It's a very challenging kind of work. Teachers historically have a lot of autonomy. You go into your classroom, you shut the door, it's a personal craft. You don't want anybody looking at what you're doing. You're fearful of the administration. The administrations are very authoritarian and people have formed unions to try to defend themselves and try to be safe and have adequate compensation. So you're really asking for a kind of work that our schools have not been organized to coordinate and manage because that requires–the uncertainty and so forth–requires collaboration. It requires people who are expert about let's say teaching math or teaching, you know, understanding the trajectories in those two areas and who can help teachers figure out how to do this, how to solve problems. Kids who aren't learning, kids who need maybe tutoring, kids who, you know, you're coping with the diversity but the diversity is too great. We need some kids need clinical help. Some kids are way ahead. You've got 25 kids in front of you. The organizational challenge that that poses makes the school have to be a very sophisticated place with layers of leadership, not just sort of, you know, the historic principle wants to make sure that the heat works and floors are being cleaned and the teachers are showing up and the kids are not raising hell and stuff like that, you know, that now the principle under this model has to become an instructional leader. It has to have other people that he or she can coordinate with and help teachers solve this. Teachers have to collaborate more. The autonomy starts to go away. People start–in the Ambitious Elementary School, there's a chart in the principal's office showing where all the classrooms are and all the

kids are in terms of their step assessment where they are in reading and you can see where your classes and which kids in the principal can see there's a collective, okay, this bunch of kids aren't, aren't they're not making progress. How are we going to solve this? Not just like how are you going to be held accountable for it? How are, you know, what's going on here? And yeah, you know, there might be some things you need to learn, some things we need to learn about how to do this because we have other kids who are having the same problem. So you can imagine that the organization, the organizational life of a school that tries to do what I'm saying is a huge challenge.

Geoff: Well, and it also seems like, you know, from reading the book, what the schools did with that information, right? I mean, they incorporated what you described earlier. This like a frequent repeated assessment of where kids are at, made it, distributed it to everyone, right? So everybody knows where everybody else is at. But then, you know, they didn't use that information, you know, to like cultivate a competitive environment, like which teachers are doing better, which classes are doing better. They used it to sort of incentivize or facilitate like communication among teachers. So when one teacher finds what's working for one's student who's struggling or a set of students who are struggling, right? Like they made a space for that knowledge to diffuse among the other teachers and for them to adopt the same practices. And it seems like some of that is not happening in the conventional organization of elementary schools, but the sort of structure that the UChicago charter schools put in place helped this to happen and that that was kind of crucial.

Stephen: That was essential. And I'm so glad you mentioned this incentive business because, you know, I've done a lot of work on value added. How do you assess the value that teachers add to students or how do you assess the value that a school adds to students learning? And they've been working on that for 30 years. And the idea that you should have teachers competing is then creating the incentive that they're going to withhold information from their college. But we just said this is a problem where there's great uncertainty that can only be solved by collaboration. So if people are withholding knowledge from each other, this is going to fall flat on its face. It's not it's not going to happen. Teachers are assessing these kids one on one. The assessments are actually one on one. Somebody else steps into the classroom, the principal, the coach. When they step in, they can see what the kids know. They can see what the kids know and don't know. They can talk about those kids. It's a collective. It becomes a collective project. So it would be very dysfunctional to pit the teachers against each other in this environment. But maybe some kind of incentive where people could learn to collaborate and people who are good at helping, not only teaching but helping other people teach would have a way of gaining and increasing their professional status and compensation. Somebody who can coach, not

only as a good teacher but can coach other people to be a teacher and then that person, that would be the person who would become the principal. Because that would be the instructional leadership that you have to have to make the whole thing work.

Geoff: So I mean, these charter schools, they incorporated this repeated close assessment of reading and math skills. They created an organizational structure with like radical transparency about what those assessments were saying and then an incentive structure that facilitated communication about best teaching practices that were producing the greatest gains. Some of the things we didn't talk about were like extended instructional time and sort of tutoring. Also this kind of cultivation of like a high expectations or no excuses culture. And they bundled everything together inside one building. And you studied how this bundle of interventions impacted students. So I wanted to ask, you know, what was the impact of attending these charter schools on students? And how did you figure out what it was? Because it's not easy to assess like the effect of attending one particular school on achievement.

Stephen: Well, first thing I want to thank you for reading the book. It's very obvious that you're at it. What you said was a very good rendering of what the argument is in the book. And I've been interviewed about this book. I think I don't think I've ever been interviewed by somebody who actually read the book. But I should say that or read it carefully. So what we did, so we leaned on–one of the advantages of doing this kind of work at the University of Chicago is that we have this thing kind of consortium for Chicago school research, which has been around since the late 80s. And has amassed a huge terrific data set on every child who's been in Chicago, started the Chicago School of longitudinal data on what they've learned and how they've progressed in school and studies of the 600 plus schools in the city of Chicago, how those schools differ and so forth. So what we were able to do was we would ask members of the community and tell them that the school existed in a couple of parts of the South Side of Chicago. Lots of people signed up. So a lot of people wanted to have their kids in these two buildings. So what we did was we, since we had more people signing up than there were places, we assigned people to be admitted on the basis of a randomized lottery. So what that guaranteed was that the kids who were attending the charter schools were statistically equivalent within limits of chance to the kids who did attend the school. And since we had this wonderful data set, we were able to follow up the people who won the lottery and people who lost the lottery. And so we had a literal randomized comparison of two groups of kids. There were probably 15 different lotteries between 2005 and 2010 because in each grade, each year, this process happens. And so you have these little pools of people who have the same probability of getting into school. So you have these, so in statistics, we call this a randomized block design. Each lottery is a block. Each lottery is a little mini experiment. And so you're pooling information across

these mini experiments. And of course, the kids are staying in the school. We're following them as long as they stay in the school. We started in 2005. By the time we published this book, some of those kids had gone all the way through middle school. And when we terminated the study, there were some kids who had only been in the school a couple of years. So it's a big data set, very messy, but it's a randomized trial with lots and lots of little experiments that we could exploit. So we have, we feel very, very confident about the causal inferences that we make from this. The effects were large, I would say, by any standard of interventions in education. And they seem to be largest for the kids who stayed the longer. They seemed like maybe 25% of a standard deviation in the early for the kids who only went for the early years. And before the study ended, maybe 35 or even 50% of a standard deviation for the kids who stayed the longest, although the sample sizes of those are a little bit smaller. But so the effects were very large. Okay, I should say, and I never did say this, that the kids in these two schools, it's basically 100% African American kids, 85% eligible for free and reduced lunch, which means that they're low income kids. So we wanted to find kids in the entire Chicago school system who looked like those kids. And also white kids who were also in Chicago. So I would say our kids in terms of their background, they weren't the most disadvantaged kids, but they were quite highly disadvantaged. Chicago has a large number of kids who come from very, very low income, various areas of the city that have concentrations of disadvantaged in their neighborhoods that are really quite, quite shocking. We estimate that on average, the gap between kids like ours and the white kids in the city of Chicago, and the white kids in Chicago tend to be pretty advantaged actually, not large in number, but fairly advantaged, that we were able to close about 60% of that gap with this by attending this school.

Geoff: So a huge reduction in achievement disparities that might otherwise be there, were it not for this bundle of interventions like under the roof of these schools?

Stephen: Right, and I think it's very significant because it's often said that given how disadvantaged some neighborhoods are, and kids are, and how families are in Chicago and other big cities, that maybe we can't really expect schools to make much of a difference. And sometimes when I tell the story, people say, oh, well, you're just saying education can solve all the problems, but I'm not saying that. I'm not saying we don't need to cope with the disadvantages that people have, and we need to create more economic opportunities and improve the neighborhood life, and so forth. I've studied neighborhoods for years, as you mentioned, and I'm a huge fan of doing that. But if you're an educator, you do, we got to do the best we can. And if we find the kids are ready to learn, despite their disadvantages, the question is, are we ready to make it happen?

Geoff: You know, the model for this Ambitious Elementary School is, as you guys describe it, that we've been talking about, can it be scaled up and transported elsewhere across the entire city? What are the obstacles to that?

Stephen: I think it's hard. And I think it's hard to sustain. It's hard to sustain because the organizational constraints, the organizational affordances that we talked about earlier, are so different from what you see conventionally. And it's a big shift in the culture of the school and the social organization of the school, the leadership, and so forth. To some extent, we had the benefit of some private fundraising that helped us put the full version of this model together in one of the schools, and it's hard to sustain that kind of fundraising. A lot of schools, by the way–economists will tell you–public schools raise a lot of money, some of them, a lot of private money. These are public schools, they're publicly funded schools.

Geoff: But did the UChicago charter schools like spend more per pupil than the non-charter public schools in the city?

Stephen: The Donoghue school had a more elaborate form of the model because they had, as an experiment, more money. But the NKO, the North Kenwood Oakland School didn't and had very good results. And the North North Kenwood Oakland, in fact, people would say, we wrote about this in the book. It's hard to estimate exactly the per pupil spending, but generally speaking, the charter schools have a little bit less money than the regular public schools, because the regular public schools have more infrastructure to support buildings and a lot of other things. But we could just say it's roughly equal. It's not more. The Donoghue was an exception for those years, for some years, some of the years.

Geoff: So certainly, the affiliation with the university, the networks, the resources, helped, but it's not like the expense of delivering this model of education is like a prohibitive for scaling it.

Stephen: And I mean, even the Donoghue school in its most affluent days would be less funded than most of the suburban schools in the Chicago area. Probably, possibly as much as a third of the spending of some of the really advantaged school districts in Chicago. So no, we can afford this. Obviously, if we had more resources, more could be done. Tracking great teachers, having the social services that we need, the mental health services for kids, that could be integrated with the instructional life. I would like to just mention one really important, because some of your listeners might be wondering, oh, is it all about charter schools? It isn't. So in New York, there was a project funded by the Gates Foundation, not to increase per pupil's expenditures, but to launch a whole large number of new schools that might be organized in different ways that could be more supportive if this was at the high school level. It's a call to small schools of choice. 100 schools in New York, 100,000

children, random assignment, Howard Blooming Company in New York at MDRC figured out. They had the same thing. They had lotteries, figured out how to put together the data to make it truly a randomized experiment. Tremendously, amazingly exciting results, particularly with respect to high school graduation and college attendance. Maybe a little more so than even test scores. I wanted to mention it because now there's an intervention that went to a very large scale and it's hard know if it's still being sustained, but it's been it is a major challenge. And I think it would require a great deal of will in society to make this kind of thing work on a large scale.

Geoff: And I think almost any organization like as big and as complicated as a school has like a lot of inertia, right? And changing it, changing the culture is incredibly difficult wherever you are, so.

Stephen: A lot of that old industrial model I mentioned a lot of those elements and those sort of assumptions are remaining with us and that's the inertia.

Geoff: I've asked you a lot about how schools can reduce inequality and you kind of anticipated this question earlier, but I'll ask you anyway. I mean, I do often wonder if when it comes to achievement disparities and inequality in the US in general, are we asking schools to do too much? And how do you think about the balance between sort of school based strategies versus kind of other social policies that might address income poverty, housing instability, health, and so forth, right? With respect to the goal of reducing educational inequality?

Stephen: Well, I think those things are very important. We have evidence that Medicaid, the earned income tax credit–we see a lot of good effects there. But here's the way I would think about it. Inequality is created by a large number of correlated forces in society, cumulatively, it's over determined by everything that you just mentioned and schooling. If you want to overcome it, you need an integrated coherent set of things that you're going to do to counteract that. The idea that, oh, what is going to be the magic bullet in the face of these correlated forces? That's a losing argument. You know, I mean, the question is, if we want to have better math achievement, let's say, overall. So here's a little factoid for you from Nguyen Park, who's a sociologist at Penn, University of Pennsylvania, comparing American kids to Korean kids on international assessments. So the kids at the 90th percentile in South Korea are about 25% of a standard deviation above the kids in the US who are at the 90th percentile. That's not a small difference. They're doing better than our kids. The kids who are at the 10th percentile of the South Korean distribution are three quarters of a standard deviation above our 10th percentile kids. That's a massive, massive difference. If we want our overall achievement to be at an equal level with a lot of other developed societies, we can't just work on the–let things go the way they are. We have to

overcome the inequality. So people who say, well, you're trying to overcome inequality, you know, why aren't you paying attention to everybody? The overall mean is not going to go up if you allow this kind of situation to persist. I mean, we're talking about a bunch of kids who, whose skills are really extremely low, extremely low. They're not really at a level where they're employable in many ways. So we got to do everything you said, but we need to do the schooling. Like I said, the kids are ready. We have a lot of evidence.

Geoff: But let me ask that question again, but now slightly differently with the US, South Korea comparison. Should we be learning–if we want to improve the distribution of our math and reading achievement in the US to get more closely approximate to South Korea's–should we be studying their schools and trying to emulate those, or should we be learning from their other social policies or both? I guess it's not an either/or.

Stephen: There's been a lot of work that's very rich and fertile and hypotheses for how to make our schools better. A lot of international work, dear colleague of mine, passed away recently, a Bill Schmidt intensively studied the curriculum, math curriculum in 50 different societies. His characterization of the US math curriculum, it's a mile wide and it's an inch deep. The societies that have high levels of math achievement, they have common curriculum, they have a common exam system. Their teachers know how to teach the curriculum that they were successful learning. Their teachers receive in most of Japan, South Korea, let's say a place like Shanghai and China, which I now know pretty well, an enormous amount of support and a lot of observation, a lot of feedback. They're evaluated according to, I mean, people pay attention to whether their kids are learning. We don't want to, we don't want to have those competitive incentives, that's part of it. They have specialization. So I have a funny story, I was telling some of my Chinese students that in the US, a first grader doesn't have a math teacher, they were shocked, shocked. How can you not have a math teacher for first grade? But if you talk to an American, a math teacher for first graders? Elementary school teachers aren't there mainly because they really are great at math and they learn math. So there's a lot we can learn about how to do the schooling. I would hope we would not–I want us to stay ambitious with elementary schools and with high schools. And I think that educational improvement is one of the more important ways along with many of the things that you said, but none of this stuff is easy or cheap. You think about the scope of the problem we're talking about. You know, we have to decide whether to invest in other people's children, people who have more resources is adding your interest to do. And I think that as a society, I think you can make the case that everybody benefits when we have a better, more educated population.

Geoff: Well, I agree with that and it seems like a good place to end things. So, Steve, thanks so much for talking with us.

Stephen: Yeah, it's great to be invited to do this and it's fun to talk to you.

Geoff: The Inequality Podcast is a production of the Stone Center for Research on Wealth and Equality and Mobility at the University of Chicago. I want to end the podcast by giving thanks to the people who really make it happen. First, I want to thank our producer and engineer, Shane McKeon. Second, I'd like to thank our assistant director, Nina Gray, for production oversight and doing so much to bring the podcast to life. And lastly, our executive director, Grace Kolovo, for her support, not just for the podcast, but for every activity at the Stone Center. You can get in touch with us at StoneCenter@uchicago.edu. Thanks for listening.