



## Season 2, Episode 2

### Future of Work (part 2): Adapting to Change

#### SPEAKERS

Sarah Webb, Jerry Wang, Jason Torchinsky, Laura Nichols, Elaine Raybourn, Hilary Egan

#### **Sarah Webb** 00:00

I'm Sarah Webb, and this is Science in Parallel, a podcast about people and projects in computational science. This episode is the second part of a two-part series about how the COVID-19 pandemic altered computational science work and workplaces. If you're joining us for the first time, I recommend that you listen to episode one first. In our last episode, we heard from Elaine Raybourn at Sandia National Laboratories about how members of the Department of Energy's Exascale Computing Project built an informal communication channel through a panel series called Strategies for Working Remotely. You'll hear from Elaine again later in this episode. Here we'll start with how other computational scientists experienced the pandemic, how they built workplace community and what future work looks like for them. Jason Torchinsky started a Ph.D. in applied mathematics at the University of Wisconsin-Madison in Fall 2018. And they kept a very structured eight to four work schedule with regular breaks and time to socialize with officemates. By the time COVID-19 lockdowns went into place, Jason had just started to feel like they were putting down roots building a daily routine and a social life. In March 2020, Jason moved their computer out of the bedroom. But this well-established work routine was gone. And other social activities like dancing and going to the gym were gone. And Jason notes that mathematics research can already be solitary,

#### **Jason Torchinsky** 01:26

It can feel very isolating, to be working from home. In mathematics, generally, you don't have a lab group. And so when I'm doing research, it's me on my own eight hours a day, five days a week with a weekly meeting with my advisor. And so being able to connect with other people is very beneficial for me to make my research seem more fulfilling, because there's other people doing their own things. It's not just me sitting in my living room eight hours a day doing atmosphere modeling.

#### **Sarah Webb** 02:04

So Jason started running for online social hours. One of those was a monthly meetup for Department of Energy Computational Science Graduate Fellowship recipients, C-S-G-F for short. The meetup started in summer 2020 as a replacement for the social component of the annual program review conference, which was held virtually in both 2020 and 2021.

#### **Jason Torchinsky** 02:27

I was really missing people. I wanted to know how people were doing what people were up to. I sent out a call for people doing a social hour, and people showed up.

**Sarah Webb** 02:38

What started as a meeting for Jason's 2019 class of CSGF fellows soon expanded to a larger group of fellows and alumni. A typical meet up might be anywhere from three up to a dozen computational scientists.

**Jason Torchinsky** 02:53

One of the main topics whenever there's a new fellow that joins a social hour for the first time is really what does it mean to be in the fellowship? What does it mean to be a graduate student with this fellowship? The question of am I good enough? Do I belong here and making the experience of being a graduate student more real and less lonely?

**Sarah Webb** 03:17

And even now that more meetings and collaborations are possible, including in person conferences, Jason plans to continue the CSGF monthly meetup online.

**Jason Torchinsky** 03:28

I think it fosters that sense of community and connection. beyond just having a Slack channel, beyond just having an annual event where you see most of the fellows. It makes the connection seem more real and feel more real.

**Sarah Webb** 03:53

Like so many others, Jerry Wang, who is an assistant professor at Carnegie Mellon University, relied on video conferencing tools like Zoom and collaborative environments like Slack for accomplishing day to day work with students and colleagues. But larger communication challenges loomed. For example, in spring 2020, just as COVID-19 lockdowns went into place across the United States, recruiting season for new graduate students was in full swing.

**Jerry Wang** 04:21

I will say that where the pandemic kind of took on a seriousness for me in terms of my research, and my working with students was the first batch of Ph.D. students that I recruited and started to work with in an entirely remote context. Because that basically was also starting up in spring of 2020, recruiting season for Ph.D. students. It's very, very heavy in March and April, and this first cohort that was recruited entirely remotely, that's really kind of wild, because you're asking somebody to make a long commitment in their life to work on a project that you're very excited about that you hope that they're also very excited about to make all of these decisions, essentially sight unseen. It's a huge decision.

**Sarah Webb** 05:04

So that meant a fully Zoom-based recruiting weekend in 2020. And virtual recruiting remains a significant part of that work, even two years later,

**Jerry Wang** 05:15

But spring 2020, that's all that we had. I was phenomenally lucky that some of the best students in that application cycle had previous experience at Carnegie Mellon in some way, shape or form. And in

every case with somebody I'd actually gotten to meet and talk with a little bit before the pandemic set in. And that was very, very helpful. I certainly did a lot of talking with people over Zoom in those early weeks as well. But it is just tough. It's a lot tougher that way. But I sympathize to the moon and back with those students who had to make significant career decisions at a time when they really didn't have all the information available to them that one might want to make a five-year decision.

**Sarah Webb** 05:57

As the pandemic went on, Jerry and his colleagues use Gather Town to reproduce some of the more organic cocktail-party style interactions that can occur at department socials or poster sessions.

**Jerry Wang** 06:08

Gather Town is this online environment where you get launched into a virtual space with an avatar, and your avatar walks around a digital map. And when your avatar approaches other users' avatars, you're launched into a video call that's private just to those people whose avatars are within physical proximity of each other on the digital map. And so it's kind of nice, because it recreates the experience of being, say, at a cocktail party. And you actually get to choose the five people you're talking with. My first kind of heavy-duty exposure to Gather Town was in coordinating the poster session for our department's summer research program, which was carried out entirely remotely in the summer of 2020. Having some way for about 30 odd students to have posters and talk with 100 to 150. Attendees over the course of a poster session share the work that they've been doing over the summer, that was our first kind of heavy-duty usage of gather time, and it was a real hit.

**Sarah Webb** 07:10

And teaching classes brought new adventures.

**Jerry Wang** 07:14

In fall 2020, I was teaching an in person plus remote class. And that was really quite a surreal experience, too, because we were in a room with 96 seats, tons of room to socially distance. Every other seat was blocked off. And we had a pretty, you know, vibrant, and reasonably-sized class. But of course, a lot of students were understandably concerned about coming in and attending class in person. So we had anywhere from high watermark of five students all the way down to zero students in the physical classroom. And that's really quite an experience teaching a class is zero in person and 25 on zoom in a classroom that seats 96.

**Sarah Webb** 08:00

So you're just standing in the lecture hall to rows of empty seats.

**Jerry Wang** 08:06

Yeah, yeah. It's really quite remarkable. I mean, these are the kinds of surreal experiences that are burned into one's consciousness for forever. I certainly think that it's made me a better teacher, because at any point in the future, even if we are in person, and zero people decide to show up for a lecture, I know exactly what it's like to lecture to zero people and make crystal clear eye contact with the camera in front of you. And don't mind that the empty gallery behind you.

**Sarah Webb** 08:39

Wow, how has that changed over time? I would hope that the room isn't empty now versus a year and a half ago.

**Jerry Wang** 08:48

No, the room is certainly that empty now. And I think I'm certainly very happy for that. And the students are as well. But you really learn a lot about how to try to both put on a show and also keep the rigor and the level of conversation at a high level, even when it's hard to feed off an audience because you don't necessarily feel that audience there in the room hanging on every line of every derivation and expressing the same kinds of surprise and shock and, and frustration with integration by parts that you always get when you're with an audience in person. I also learned a lot about myself, you know, kind of intellectually, psychologically, physiologically. My very first lecture in fall 2020, my first lecture in a mask, I opted for this clear face mask. It's basically a plastic shield with a little bit of a chin guard made out of foam to keep it off of your face. And I thought that this was a nice choice. The students agreed in a poll that we conducted, so it felt like the right choice to make. Little did I know this plastic material was apparently one of the most hydrophilic substances on the planet. And that's not how we tend to think of plastics or a lot of polymers. But this one, in particular, was unbelievably hydrophilic. So enormous amounts of my verbal enthusiasm was condensing on this and then eventually running down. Probably by the 20-minute mark was the first moment I noticed that there was a, an aqueous situation happening on my chin. By the 30-minute mark, it hit the top of my collared shirt. My class is an hour, 50-- an hour and 50 minutes, twice a week. So by the 45-minute mark, I had stuff down to the bottom of my shirt. And by the time class was done, I had my own verbal enthusiasm, dripping into my sock. And I learned a lot about myself in the process, and my own response under stress.

**Sarah Webb** 10:59

I guess you made some adjustments after.

**Jerry Wang** 11:02

Yeah, there were some definite investments, I brought my lecture towel to class. And it's part of understanding that this is now how classes need to be, and the need to be towel off breaks that happen. There's no shame whatsoever. When the folks that professional basketball players, professional athletes towel off in between sets of a tennis match or during timeouts, and I had to have my own timeouts to towel off to make sure that this didn't happen.

**Sarah Webb** 11:28

Hilary Egan has started working at the National Renewable Energy Laboratory in June 2020, has tried to set up smaller Zoom conversations to begin to build new teams and collaborations. But she's definitely looking forward to the chance to work with colleagues face-to-face, at least part of the time.

**Hilary Egan** 11:47

Altogether, it's really underscored the importance to me of the non-science portion of building collaborations of getting to know people in sort of an organic fashion. I think it's really hard in Zoom meetings to ask someone about their day or comment on the weather -- like things that you would just have as a casual discussion while waiting for something else to happen. And those little moments are, I

think, a lot of what I miss and how you really start to understand someone's personality and beyond just "Okay, they wrote three papers last year. I would like to be on two of them next year." I think those little moments and organic building of collaborations. And I'm a pretty friendly person but really struggled to get to know people via Zoom.

**Sarah Webb** 12:38

Online meetings haven't been universally negative, and increasing comfort with them can also overcome some barriers. Jerry Wang likes the spontaneity of setting up a Zoom meeting versus the logistics of trying to get everyone in the same place at the same time.

**Jerry Wang** 12:52

If we've got fun ideas that are kind of cool and neat, we can get to them right away that sense of agility. That's another thing that I really want to take into the future. And I do think that I've started up a lot of collaborations and really gotten to meet a lot of people who I probably would have been a lot more reluctant to do so if it was still business as usual before the pandemic. Because even the whole idea of setting up a whole bunch of web conference meetings in short order, there used to be a much larger emotional and logistical inertia to that which is totally evaporated now.

**Sarah Webb** 13:27

Virtual work—and the broader acceptance of it— has been a tremendous opportunity in some situations, providing new research options for people with geographic, family and other restrictions. In early 2020, Laura Nichols was commuting an hour each way, five days a week from her home to Vanderbilt University for graduate courses and to meet with her colleagues. When COVID-19 shut down the campus, classes and group meetings pivoted to Zoom, and suddenly she no longer had long daily drives.

**Laura Nichols** 13:58

I loved it, honestly. I mean, I had been trying to advocate for more remote work prior to COVID happening. So I was excited for the opportunity to get to work from home more. It's great not having to drive down to Nashville with all that traffic, for sure. It was kind of different adjusting to not seeing everybody in person. But our group did really good at setting up regular Zoom meetings. So we still got to talk to everybody regularly, even though we're all kind of in our own little bubbles. And I was actually pregnant at the time. So very glad not to have to walk around more and get out, especially with the pandemic going on.

**Sarah Webb** 14:43

And the sudden flexibility helped her manage family leave and the transition to new motherhood.

**Laura Nichols** 14:49

But as far as work, it actually worked out really well because if I was having to come down to the office, I wouldn't have been able to have so much leave after. I actually was on bedrest for two months before I had my daughter because I was having contractions early. And then I stayed home with her for three months after that. And that whole time, because everything is remote, I'm able to work on my computer during her naps or after she goes to bed. Everything was super flexible. So it really meant that I was

able to maintain dual commitments, you know, to new motherhood, but also still getting my research done still maintaining that involvement. So that was really great.

**Sarah Webb** 15:34

Remote work gave Laura more freedom in choosing a national laboratory practicum as part of the CSGF program than if she had been working in-person. She had been nervous about the idea of being away from her daughter for three months. And even the nearest DOE laboratory to her home, Oak Ridge, was three hours away,

**Laura Nichols** 15:52

I probably would have had to push it back further if it wasn't remote. And then even if I was able to do something really local, like Oak Ridge, it was a lot of time that I would have had to be away for my daughter and really limiting as well because I had already done an internship at Oak Ridge. And having that experience again I'm sure would have been great, but definitely not as enriching as another lab getting to meet new people and work on a completely different project. And especially being here in Tennessee, I never would have been able to consider doing a practicum in California. I actually worked with Lawrence Berkeley National Lab, and it was a really great experience. And I got to connect with new people that I never would have had that opportunity had remote work not been a thing due to COVID.

**Sarah Webb** 16:41

Even now that Laura can travel to Vanderbilt when she needs to, she still works primarily from home,

**Laura Nichols** 16:47

The remote work during the lockdowns, it was kind of a proof of concept for my advisor, like "Hey, I'm self-motivated, I can still get this stuff done." And I don't have to commute. I actually still haven't gone back to campus very much. I had a class last semester. But other than that, I just stay at home and work. And it's been great. My advisors used now to Zoom calls. He does them like all day. So he's like, "Oh, what's the difference if you zoom in, you know, versus being here in person." And actually, I'm pregnant again. So I'm very happy again, to have that ability to not have to walk around campus so much and stuff and just be able to stay home and have more time with my daughter as well be able to pick her up earlier from daycare and everything. It's there's really great flexibility. Obviously, the COVID stuff was a very dark time in many ways. But it has definitely provided opportunities, especially for working people with families to have more balance. And I think that's a really great door that's been open. And it seems like things aren't just going back to the way they've been before. You know, we're going to be using that going forward and hopefully having more flexibility and allowing people to have that better work life balance.

**Sarah Webb** 18:08

This moment also gives us an opportunity to think about workplace diversity, equity and inclusion in new ways, according to Elaine Raybourn of Sandia National Laboratories, we can think about the ways that face-to-face communication privileges some employees, how virtual environments shift workplace communication, and how we can foster inclusion, community and employee wellbeing going forward.

**Elaine Raybourn 18:33**

We've been talking about diversity, equity and inclusion for a while. And actually, the pandemic happening in a time of social change has really given us an opportunity to rethink how we approach it. I think there have been some very good changes with respect to how virtual technologies or technology-mediated conversations have actually increased, potentially, the awareness of how face-to-face privileges certain communicators versus others and changes that we need to make in that environment. But we've also seen, too, where some are just more comfortable with the virtual environment. And suddenly, in that environment, you know, we have now a new group of folks who don't feel so comfortable that that need to be brought into the fold. So, in a sense, what I'm trying to say here is that I really see that with respect to diversity, equity and inclusion, we need to really think about who's being marginalized when. What do we need to do to help that so that everyone has that experience of feeling included. It flipped the switch for so many people. Persons who were marginalized became privileged, and those who were privileged became marginalized. Or those you know, who were suffering microaggressions in the face-to-face environment suddenly realize that in the virtual environment, they they suffer fewer. It's not that they're not out there, we still need to address that. It's just that once you change the communication channel, you change the experience. And so in some respects, the communication channel has created for us new feelings, new experiences. And we should take time to think about that. Using that example, in using a virtual environment, I may not feel a microaggression, does that mean that it's not there? If it is there, we need to do something about it. I think a lot about our mental health, our physical health. There are so many things that we need to make sure that we're working on as we come out of this pandemic, and that we continue to work on: staying physically fit, mentally fit, being able to talk about our experiences with others. This is an interesting time for us; it's really our time to step up.

**Sarah Webb 20:54**

As we move toward a post-COVID work era, I asked people about their ideal work arrangements, and most people really like a hybrid approach that offers the flexibility to work remotely for focused parts of a job and a chance to meet and collaborate. too. But I was particularly interested in what Elaine, as a social scientist who grappled with these issues, was thinking. If you could design the ideal space based on what you know, and what what you've learned, how would you make that look? And what would you want that to look like in say, five years?

**Elaine Raybourn 21:28**

That is an excellent question. So again, you used the word look how I want it to look

**Sarah Webb 21:36**

or feel, I think, going back to your verb. Feel is an important one.

**Elaine Raybourn 21:40**

Yeah, let's talk about how we want it to feel. If I were queen for a day, I would want a workspace, or five years from now, I can envision workspaces where the workspace itself is a combination of not only the physical location, but also leverages the local environment that it's in. And by that I mean, it leverages the outside. So I'm thinking about a physical location, with an outside area, leveraging the community that you're in. I'm thinking about settings where the organization as we call organizations, perhaps don't

have the boundaries we associate with physical spaces. And so that's been one of the things about the pandemic that I believe has really helped us have greater understanding is that we've had the opportunity to think about our work as perhaps happening in a larger environment than just our institution. We've had the ability to have cross-institution collaboration. And we've been able to really spread and reach much further than perhaps any of us really thought we would. I would like to have an environment where we could continue that, where I as a member of the workforce, as scientists, I don't feel constrained by space or by time. I want to be able to have an environment where what defines my work is the creativity and the innovation, and where I can immerse myself in that. I want to be able to have that feeling of spontaneity. I want to be able to also have quiet time where I can do deep work. In order to achieve that. So I start with the end, I would want to re-engineer it, I would want to think out, "Okay, how do I achieve all that?" I feel that we need to listen a lot. And so I'm a big fan of listening to everybody, listening to the stories. One of the things I learned the most from the panel series is that every story is important. Every experience is important. And everyone has something to say. And when I've gone out and talked to different institutions, or I talked to different departments, I always learned something. And it's incredible, just the resiliency that I've seen and the stories I've heard of how people have dealt with it. There's so many lessons learned out there that, honestly, I would want to find a way to incorporate all that into a space, a future that we co create together, that isn't bound by walls.

**Sarah Webb** 24:30

In the next two episodes, you'll hear more stories as I talk with computational scientists who navigated major life and career changes during the COVID-19 pandemic. Next up are two Ph.D. students who faced the challenges of graduate school while caring for their infant during lockdown. After that, you'll hear from a computational scientist who moved to Finland permanently with his family during summer 2021. And in the meantime, check out this two-part episode's show notes where you can learn more about our guests and the ECP Strategies for Working Remotely panel series. You can find all of that at [scienceinparallel.org](https://scienceinparallel.org). Science in Parallel is produced by the Krell Institute and is a media outreach project of the Department of Energy Computational Science Graduate Fellowship program. Krell manages this program for the U.S. Department of Energy. Our music is by Steve O'Reilly, and this episode by Sarah Webb and edited by Sarah and Tess Hanson.