"It Was Really Inspiring to Find Companies Carrying Out Really Impressive Missions"

Kirsten Smayda

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Abstract In our interview with Kirsten Smayda, she tells us about her role at a neurotherapeutics company. Here she does applied research that relates to her earlier PhD work, using music for clinical applications. Kirsten discusses her transition from academia to the industry, the similarities and differences between the two, and her passion for her current work which aligns with her academic background. She highlights the importance of viewing the academia-industry spectrum as a set of opportunities rather than a dichotomy. In particular, she emphasizes the importance of networking, gaining industry exposure during doctoral programs, and considering initial industry jobs as stepping stones. Kirsten also explores the notion of academic freedom in an industry setting and reflects on the potential to have a greater societal impact by working in industry. Lastly, she advocates for increasing collaboration between academia and industry.

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Chris: Can you introduce yourself and tell me a bit about your current position?

Kirsten: Sure thing. My name is Kirsten Smayda; I'm from New York, currently living in Maine. My background is in voice performance and cognitive psychology, and I currently work for a company called MedRhythms, a music-based neurotherapeutics company, where I lead the Applied Research and Data group as a Senior Applied Research Scientist. Our initial product is a walking intervention for people who have chronic stroke walking impairment. The intervention is built on the principles of rhythmic auditory stimulation. Our pipeline currently includes interventions for other populations that experience walking challenges as well. In Applied Research we work on testing and iterating on early-stage concepts that may or may not make it into a product or product candidate, working with internal and external business (including academic) partners to provide scientific perspective, and building research- and science-based community through partnerships. The common theme among my responsibilities is that it's related to "science." Be it research, literature synthesis, manuscripts, abstracts, or posters, or grant writing, or data analysis, most of the activities I'm involved in are activities that occur in the translation of science.

What was the focus of your PhD?

I completed my PhD in Psychology at The University of Texas at Austin in December 2017. The focus of my PhD was in auditory cognition. When we are listening to the auditory world we exist in, we recruit cognitive resources to process sound and

derive meaning from it. Several of the cognitive and auditory faculties required to conduct such a task are also components that instrumental and vocal music training can hone. I received an F31 from National Institute on Aging (NIA) to study the impact of group piano lessons on cognition and speech perception in adults over 50. Cumulatively, my work resulted in a dissertation titled "Enhancing Older Adult Speech Perception in Challenging Listening Environments: Contextual Cues and Music Training."

As you were finishing your PhD, what were you thinking about your career plans?

I was thinking a lot of things. Before I finished my PhD I realized I needed a job, I didn't have any stand-out leads within academia, I wasn't thrilled at the prospect of *trying* to get an academic job, I wasn't thrilled at the timeline for a secure academic job, and I wanted to make a bigger impact sooner. Having been part of the cognitive aging world, I realized there were huge missed opportunities for applying basic concepts of healthy cognitive aging in the development of commercial products or tools created for people. My ultimate goal was to try to find an avenue to do something music psychology related because that was what I have always been most fascinated and driven by. A few people in my lab had attended and successfully obtained jobs through a fellowship program called Insight Data Science. So I applied for the Fall 2017 semester and completed my PhD while pursuing the fellowship in Palo Alto, CA. I was hopeful that I would find a job that would allow me to get my foot into the industry door, and the door that opened was for a prescription digital therapeutics company called Pear Therapeutics. I started as a Data Scientist for them in January 2018. I realized quickly the value of being able to communicate about data, and how much of a bridge "data" is between academia and industry.

Can you tell us about the skills you learned in the Insight Data Science fellowship?

For me, the skills that Insight helped me learn were multifold. I was paired with a startup company, Gobble, which is a meal prep kit with a one-pot, few steps approach using generally healthy ingredients. Gobble is where I first learned how a company could use data to answer questions that support business decisions. For instance, using social media posts, can we tell what dietary interests are most popular?

I learned how to connect business value to data analyses. What I mean by that is we each have a limited amount of time in the day, and work needs to happen fast in a startup or otherwise generally fast-paced environment. And your time is valuable – the more value you create for the company, the better the company can do,

and the bigger impact your work can have. However, you must also take care of yourself and prioritize your wellbeing, which means you need to make tradeoffs on tasks that are most critical for the company. If a task, big or small, does not contribute meaningfully to the mission of the business, it will likely need to be deprioritized. This practice can help maintain control over your wellbeing, while making the biggest impact at your company. And in order to make those decisions, one must build intuition around what moves the needle for the company.

I also learned a lot of new acronyms: OKR (Objective Key Result), MAU (Monthly Active Users), KPI (Key Performance Indicator), etc.

How have your career plans changed as you've continued on to your current position?

A lot hasn't changed for me. I am still working to progress the use of music for clinical applications, which is consistent since my PhD. And a lot resembles great aspects of my PhD career. I still get to have scientific conversations and collaborate over scientifically-informed ideas. I also have the honor of collecting data on the behavioral and neural impacts of music for different clinical populations. However, along the way, I've also learned more about what aspects of research and work, broadly, I don't enjoy. For instance, I don't love running analyses. I'll do it when needed and I very much appreciate the insights that data analysis affords; but I don't really enjoy the process of number crunching. It has been a privilege to be able to tailor my work environment to suit these preferences.

Can you tell us a bit about what day-to-day life is like in your current position?

This varies day to day, sometimes drastically. Some weeks are full of meetings, and other times I'm heads down in a writing project. The meetings I attend range from 1-to-1's, team meetings, project meetings, presentations, conversations with academic partners, conversations with other third party vendors, and ad hoc meetings. During the meetings and outside of the meetings, a lot of my job is coordinating people and processes so that we achieve our research, scientific, and commercialization goals. For instance, partnership development, mentoring, scoping and planning software engineering work, study design work, working with data, and meeting with external folks. In general, I have flexibility to work earlier or later in the day, from the office or remotely, and I try to get home in time to exercise before it's too late.

How does research work in this type of industry setting?

Research works in a lot of different ways in an industry setting, and there are a lot of different types of research in this type of industry setting. Here, I'm defining research as a set of activities that includes data collection from an experimental process and the dissemination of such results. Types of research include (probably not exhaustive) the following:

- *Product Research*: Includes user experience research, clinical trials, early prototype development, observational.
- *Model Development*: Designing experiments to test different computational models of some process or behavior.
- *Clinical Research*: Including clinical trials, early stage concept development with the purpose of impacting the health of a human or animal. This could be conducted entirely internal to the company and could be in partnership with an academic collaborator or another company.
- *Market Research*: In order for a team to know where and for whom a product is best served, research is conducted about the target user(s).
- *Health Economic Research*: In order to know how much a product or service impacts the healthcare system from an economic perspective, research is conducted to characterize what services increase or decrease as a result of the introduction of a novel product or service and the resulting cost savings.

What do you like most about your work?

There is no one thing that I like most. I like the gestalt of it – I'm paid well for work that I find fulfilling, and I'm empowered to make decisions that drive impact for the company. It's great in its gestalt.

And what do you like least about your work?

I dislike having to be on zoom calls for a large proportion of my work. I wish more meetings were in-person. It's easier to empathize with people in-person, and conversations are easier for me too.

How do you think having a PhD has helped you succeed in your current position?

Having a PhD regularly helps me succeed in my current position. From a PhD skillset perspective, the ability to learn is very helpful (and valuable!) in a start-up environment, and I regularly use my skills in reading and writing scientific articles and grants

to support the business goals of the company. And there's a certain grit that you receive throughout a PhD that has been helpful in weathering storms that might blow in. My ability to analyze and, more importantly, communicate the results of an analysis has also been invaluable in my role. Lastly, I think my current position is unique in that I interface with academic labs regularly, so the ability to empathize with the system and processes at play in their environment has definitely helped me succeed.

How do you think doing academic research in industry compares with doing research in a university setting?

This will depend on the company you work for and its goals. Based on my experience, I see a lot of similarities *and* differences. In terms of similarities, you may do research that translates a familiar scientific concept into a unique application, work with similar clinical populations, or domains of science (e.g., cognition, movement, perception). There are logistical similarities too: recruitment, data collection, data analysis, grant writing, and conferences. However, I found new types of research that I didn't know existed from my time in academia: user experience research, implementation research, and health economics research, to name a few. User experience research can be used to find common themes from among users of a product or service. Implementation research can study how to best implement a new product or service into an existing model – for instance, prescription digital therapeutics are a new class of treatments that must coalesce into the existing healthcare industry. And health economics research characterizes how the introduction of a new product or service in healthcare impacts the cost to health insurance companies. So, I learned about new types of research after taking a job in industry, and there are a lot of familiar research activities in the research that I currently carry out at MedRhythms.

If someone currently finishing their PhD was considering a position similar to yours, how might they decide if it would be a good fit?

I would recommend that they talk to some of the employees to see if they like the people they'd be working with. I'd also recommend that they think about all the different types of tasks they do in their PhD and notice what overlap there is in the position. In my position, I wear a lot of different hats, and depending on the week, I might be doing very different activities than I was the prior week. For instance, 1 week I might be getting a new study going with a collaborator for the whole week, and the next week I might be in full editorial mode trying to get publications out the

door. If you crave a stable, closed set of work activities, the position I have may not be the best fit. Contrastingly, if you love hopping around to different teams and solving different problems, this role might suit you well.

If someone was interested in pursuing a similar career path, what would you suggest they do to better prepare themselves?

It's hard to give a one-size answer here. Everyone has a different experience in academia, so everyone could enter an industry career at vastly different places. I would want to talk to this person to understand what gaps in experience they may have. I can recommend one piece of advice that likely holds true for a lot of people: get on LinkedIn sooner. Find foundations, institutions, people, and companies whose content you like and interact with those posts. LinkedIn is a set of algorithms so it will only provide recommendations based on the data you give it. If you're looking for what jobs exist (even just to browse before applying), spend some time intentionally feeding the algorithm your interests. And consider the fact that "likes" carry a different weight than "posting" or "reposting with comment" in the algorithms. It was really inspiring to find companies carrying out really impressive missions, just by using LinkedIn. One limitation, though, is that it *is* a social media which can carry its own drawbacks as a tool you might use regularly.

A lot of people like academia because they feel it gives them an opportunity to work on a topic that they deeply care about. Do you think this is also true in your current position?

Yes, absolutely. For me, it's an extension of the work that I did in academia, and I'm fortunate to partner with academia to continue the work that I deeply care about. My PhD research focused on how music training can impact our speech perception abilities from a cognitive and neuroscientific perspective, which exposed me to research on music perception, motor and skill learning, and music therapy. My current company uses music to treat neurologic disease and injury, so I've already been exposed to a lot of the foundational scientific concepts and even applications for music that we might develop as a company. In my case, I care deeply about what music does to the brain and how music can be leveraged for therapeutic applications, which has not changed since even before my PhD.

Another reason many like academia is that they feel it provides them with more freedom than they think they would get in other positions. How much freedom do you feel you have to work on what you think is interesting?

If you have a good manager, they can help find paths for you to pursue projects that you're interested in. Oftentimes, the work has to align to a business goal, but it's not entirely dissimilar to academia where you have a grant and you have to carry out research that pertains to what you wrote the grant about. There are boundaries for what you can work on in both circumstances. And, just like you can switch labs if another topic becomes more interesting to you, so can you switch jobs or roles (potentially more easily) if you find you would rather work on something else.

There's also an additional freedom that the financial aspect of an industry job can provide outside of the job. It allows freedom for how you spend your after-hours. You may find you have more freedom outside of your job to pursue other passions or spend it however you would like.

Lastly, some jobs offer benefits that afford additional freedoms like really good paid time off, unlimited vacation days, hybrid working arrangements, flexible working hours, or opportunities to attend conferences and workshops. These flexibilities create a different context in which you do your work, so I would consider those flexibilities as well.

Have you thought about returning to academia?

Engaging with academia from an industry side is a sweet spot for me right now. I feel like I get the best of both worlds because of the collaborations that I take part in and the work that I do. And, in a lot of ways I'm still an academic – if "being an academic" were a spectrum, I would certainly land on the "more of an academic" end of the spectrum than coworkers who have not gone through a PhD; so I think it's a matter of what you define as "academia." If I were to return to a research position within a university or college setting, the work would need to be translational in nature and include industry collaborators. I'm interested in my work making an impact on a larger scale than what is typically afforded within academia.

Based on your journey, what advice or suggestions do you want to pass on to someone who's currently finishing their PhD?

Seek to understand the variety of opportunities that might be awaiting you as soon as possible, ideally before finishing your PhD. Get on LinkedIn. Use your network to make connections at places you find fascinating, and don't worry about what you

take as your first industry job. Once you have an industry job, it is a lot easier to get subsequent jobs, so don't put too much pressure on finding the perfect job from the outset – think of it as a necessary stepping stone.

Is there anything else you'd like to tell someone reading this interview?

Try not to limit yourself by thinking of moving into industry as a unidirectional movement. There will be more and more opportunities for collaboration between academia and industry with every year. You may even be part of the movement to create those opportunities. Don't fall prey to the false dichotomy of "industry" and "academia." Appreciate them as spectrums because you can do academic research in industry. And just because you're in academia, doesn't mean you're doing "science" well. Also, as universities evolve with the times, I predict there will be more and more academic positions that advertise for skills in industry in order to bring resources and perspectives into departments and support their students who have interest in translational work and roles within industry.

This is a great point, this is definitely becoming increasingly true. Thank you for telling us about your career and sharing your insights with us, Kirsten!