

“A PhD in Industry Is a Revered Qualification”



Joseph M. Moran



Abstract In our interview with Joe Moran, we discuss how he transitioned from academia to data science, including some of his missteps along the way. Joe provides some insights from his experiences on how PhD training can be applied in an industry context, such as in user experience (UX) research. Moreover, Joe provides direct and helpful recommendations on how someone can become better prepared to engage in data science or UX research. PhD students should do their best to discuss potential career paths with those in different jobs, both in and out of academia.

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J. M. Moran (✉)
Rapid7, Boston, USA, MA
Google, Cambridge, MA, USA

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

Joe: In my current work, I lead a team responsible for customer research at an Internet security company. Whenever people have a question about our customers they don't know the answer to, they can reach out to us, and we can help them get that answer.

Most of my work involves interfacing with other teams to ensure that the work we are doing remains focused on business goals and the goals of the product and marketing teams with whom we work. I then direct my teammates toward projects and efforts that will enable us to deliver against company goals and against the needs of the organizations we work with. Briefly, we conduct two kinds of research: (1) research that supports the teams that build our products, which is focused mostly on qualitative studies about user needs and product issues (UX research), and (2) research about how our marketing efforts are working with individuals who are not yet customers. This work is more typically quantitative in nature, looking at things like web analytics and conversion rates, for example.

What was the focus of your PhD?

I completed my PhD in the Department of Psychological and Brain Sciences at Dartmouth College in 2006. My PhD work was in the field of social neuroscience, focused on the neural representation of the self and others. This work began by investigating how the brain encodes information about the self – when I ask you to reflect on whether individual items are related to you, which parts of the brain

predict whether you will later remember having seen that information when I ask you to recognize those items?

I then continued in this vein, further looking at the boundaries of the roles of the default mode structures in self-reflection and self-relevance. It was exciting work in a cross-disciplinary way, picking up skills and knowledge from cognitive neuroscience, statistics, programming, and social cognition along the way. One of the things I particularly liked was getting to attend conferences from very different scientific traditions while learning the particular languages of the subfields I was wandering into.

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

My initial considerations, both during and toward the end of my PhD, were that I would continue in the same path as my mentors, onto a tenure track position at a research university. In fact, at Dartmouth at that time, that was very much the expectation of the program on its students. We were told, both indirectly and directly, that we should view success as a faculty position at an R1 university and any other career path as less-than. This certainly influenced my feelings about looking outside academia at the time. My initial steps were to take a postdoctoral position at MIT, where I continued and expanded on my PhD work by looking at how self-reflection, and its neural instantiation, might differ in disorders like autism and schizophrenia and how it might change as we age.

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

During the financial crisis of 2008 and beyond is when I was seeking academic positions. There was significant competition for very few assistant professorships at the time, and so I ended up taking a second postdoc and continuing my search. As I ventured further into the job market, year on year, several nagging thoughts began to emerge that maybe this wasn’t the path I wanted to be on. The yearly grind that I would have to potentially move my wife and young children to a random city far across the country became harder and harder to face. And I was beginning to wonder for what I would be doing that? As my friends became assistant professors around me, and I started to learn about the tight focus and continuous grant writing that a tenure clock demanded, I began to really examine whether those things were what I wanted, especially given the aforementioned social costs associated with pursuing such a career.

As I thought more deeply about what I wanted to spend my time doing, it became clear that a path to industry might be the right one. I enjoy solving problems, I enjoy evolving challenges, and I enjoy working on things that have rapid impact on the environment around me. Academia did not seem a place where I could engage in two of those three things.

I started to learn more about industry roles like “data scientist” and “user experience (UX) researcher” from friends who had made the switch from academia, from introductions and from coffee chats and information interviews alike. The process to becoming competitive for positions like this, coming from academia, involves a lot of shedding assumptions about how the work is done and what kinds of activities and postures get rewarded in industry. It took me about 12–18 months before I was able to get my CV into the shape that would get past the filters for industry jobs and then another 6–12 months of phone screens and initial interviews before figuring out how to speak like an industry data scientist or UX researcher. There were many missteps in those initial outreaches to companies, where you could almost hear the door closing while the recruiter was still on the phone.

If you don’t mind, can you tell us a bit about some of those missteps?

Most of the difficulties I faced in the early parts of my search were related to not being familiar enough with specific techniques in data science and machine learning. At one company, I failed a phone screen because I hadn’t worked on collaborative filtering for content recommendation; at another, I didn’t make the cut because I hadn’t come across multi-objective optimization before. I realized that this confusion was a two-way street: recruiters new to finding data scientists were over-indexing on single methods on job descriptions, and I was over-indexing on what I already knew, without joining the dots between these techniques to present as more well-rounded. As I learned to navigate these complexities a little more successfully and make it deeper into the selection process, other things tripped me up. At one company, who was looking for their first data scientist, I readied my Data Science 101 presentation, turned up at their HQ in a different city, and proceeded to get laughed out of the room by some well-seasoned machine learning engineers – I had not realized I was applying to a smaller subsidiary of a larger company who in fact had a very well-established team and was looking for a similar level counterpart to run data science in simply a different office.

All of these missteps and failings produced learning opportunities however. I began to practice different techniques on nights and weekends, working on data science problems in my spare time, until I felt confident enough that I had a broad enough understanding where I could come up with good-quality solutions to hypothetical problems posed during on-site interviews.

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

In my current position, as manager of a customer research team, I have moved more toward the qualitative side of the equation. My team consists of six full-time researchers, ranging from psychology PhDs to folks with marketing backgrounds and beyond. Day-to-day life for me typically involves one-on-one meetings with my team members: opportunities to dig deeper on their current projects and needs and less frequent development conversations around their goals for personal growth and exposure to new methods and techniques. Within those conversations, I get an opportunity to mentor junior folks and support the more senior members of my team in expanding their horizons beyond the focus of my department.

Personal and team success in industry is all about relationship building. While academic science is collaborative and requires working with others, those roles are more easily constrained by the nature of the work. A postdoc manages the day-to-day work of a research assistant while perhaps mentoring a grad student on a new analysis technique. In industry, the success of a manager really depends on how well they can communicate the role of their team in helping others to succeed. So most of my day-to-day life is relationship building and maintenance with managers and directors from other departments: Experience Design, Engineering, Product Management, Marketing, Customer Success, Onboarding, etc. My role is to “sell” the results of my team’s primary research to encourage improvements to products and processes that result in reduced financial risk to my company. A fair bit of my work involves evangelizing the existence of UX research as well – industry is fast-paced, and each team you interface with has varying degrees of facility with all the ins and outs; the product team of a company we recently acquired had almost no knowledge of the role of a UX researcher, and so we’ve had to build that relationship from the ground up.

Other day-to-day things involve cross-functional alignment. This means realizing where there are process gaps between teams (one of the benefits of being in UX research is you get to talk to everyone) and then creating ideas to improve those processes and bringing those ideas to the teams involved. Lots of slide deck preparation and presentation and then iterative work to zero in on what would make the most sense. Here, too, collaboration is critical – you need to approach the work with humility, recognizing that quality ideas can come from anywhere and that the real work is in capitalizing on those ideas together to ensure everyone’s success.

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

The first and most direct way that a PhD in psychology has helped is domain specific. Learning about cognitive and social psychology – heuristics and biases, fundamental attribution error, framing effects, attitudes to risk, etc. – has enabled me to apply these principles to the work that we do every day, both in thinking about how my colleagues react to events and how our customers interact with our products. One of the things we make is a risk score – I was able to contribute to early discussions with our data science and product management teams a perspective around how people perceive risk and how framing motivates risk-seeking and risk-averse behavior. A background in statistics has come in handy when working with marketing research folks – teaching them how to build confidence intervals, how to run simple inferential tests, what representative means, what normally distributed means, etc.

Beyond these domain-specific things, a PhD has enabled me to bring a depth of thinking and rigor to an environment that rewards breadth and speed. Industry professionals are excellent at moving quickly – spinning up ideas and testing them out, moving forward on relatively little feedback. Having a PhD enables me to do the work of knitting together those observations over time into a coherent framework and then reinserting that knowledge into the development process when appropriate, thus providing more context and depth for future ideas and experimentations. But this didn't happen immediately – initial attempts to bring this deeper perspective in my first industry position brought blank stares – you have to be able to move at industry pace while building up deeper insights. There's no long pause button where you get to go away into the cave and come back with a fully formed theoretical viewpoint.

Finally, a PhD in industry is a revered qualification. It can open doors in executive discussions and in customer-facing engagements. Very few people in industry have PhDs, and the title definitely lends a certain amount of gravitas. But it is important to bring the rigor and ethical stance with you when you earn that gravitas; just because you have PhD after your name doesn't mean that whatever you say is right – you need to keep your instincts sharp and make sure you don't stray beyond what you know is true.

If someone currently finishing their PhD was considering a similar position as you have now, how might they decide if it would be a good fit?

Three methods that can help you learn about what it is like to work in an industry UX research position are coffee chats, informational interviews, and shadowing. I arranged them in order of formality; coffee chats are a simple method to gain

awareness of what it’s like to work in a given industry position, from a current practitioner. These can be helpful to increase the size of your network and gain an ally who can help you figure whether job opportunities you spot might match your skills and experience, for example. Informational interviews are a little more structured and involve asking a series of predefined questions (lots of templates and ideas online) designed to help you decide if this sort of work suits your style, personality, and goals. Finally, shadowing can be great to get a sense of what the actual day-to-day life of a UX researcher in industry looks like.

As you engage in these ways, think through how you like to spend your time each day. Are you deep in the data, exploring and writing code? Are you thinking more about what we want to study and how we might go about that? Do you prefer spending your time mentoring more junior folks? Having a sense of what you like and don’t like about your current work will help you to make sense of what you would prefer in an industry setting.

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

My experience has been in data science and in UX research, so I’ll limit my comments to those domains.

Data Science

Learn one programming language really well, whether Python or R. Depending on the positions, you might be a “type A” or a “type B” data scientist. Type A is for analyst, and that is someone who writes code to connect to data sources, ingest data, clean and tidy it, run descriptive stats and create visualizations, and then create inferential statistics and models to, for example, determine whether an intervention worked or forecast future states. Type B is for builder, and that is someone who is creating (typically) machine learning models that need to run in production and interface with all the other data pipelines and production systems that companies use. Generally, but not always, type B data scientists will work in Python, whereas type A data scientists might use R, Python, or a mix of the two.

Data scientist interviews typically involve your knowing why, when, and how to implement particular models or algorithms, with discussions about projects you have completed where you did so. They will also use hypothetical data situations to get a sense of your creativity in coming up with plans for modeling the kinds of data that their company might collect. To relate previous experience to their industry perspective, focus on why you made analysis choices you did, how you worked on the data, and what the end result enabled.

UX Research

Industry UX research teams want to know that you can choose successfully among the wide array of user research methods available to creatively answer given industry

challenges. They'll look for you to show how you have been creative with methods in the past to figure out how to learn what the product teams need to know and will also pose hypothetical questions about situations that might face their teams currently. Spending quite a bit of time on figuring out how industry terms relate to academic science terms, and being comfortable translating between the two, would be of great benefit. For instance, contextual inquiry, a common industry method, means nothing more than watching how people complete tasks in a natural setting and (maybe) occasionally asking probing questions about what it is they are trying to get done and how. How has your academic work prepared you to do that kind of work in industry? I'll bet psychologists can think of many ways that a keen eye for observation has helped them narrow down experimental hypotheses.

Further, building up a portfolio of work you've actually done can be beneficial too. You might conduct a heuristic evaluation of a popular consumer website or run a usability study on some workflow in an application that you like to use. For these, one can recruit friends and analyze the data independently. Hiring managers like to see your process and learning, which can easily be captured by doing a project like these.

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?

In short, both yes and no. It depends on how you define "topic," and it depends on how you define "deeply care." In industry, you're not free to pursue for long periods of time a particular topic through iteration and careful testing of parameters over years. That much is for sure. However, I would argue that in academia there is actually quite a bit of constraint on the topics one can choose to work on. You need to choose something that funding agencies care about, that hiring committees value, and that departments see fitting in to their broader community. You can't simply commit to a huge research program on your esoteric topic if you can't convince others to give you the space, funding, and students with which to do it. And the same is true in industry – we're definitely constrained to focus on things that the broader company thinks are important. The level of constraint in industry is just tighter compared to academia.

Secondarily, I mentioned how you define topic. Some folks are driven by a particular question or topic their whole careers. For those people, I think academia is likely the right place. But many are driven by the intellectual challenge of problem-solving. Still more are driven by connecting their work to more visible or more rapid impact. So for those kinds of people, topic is less important, and it might make sense for them to consider a career in industry.

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?

This is an interesting topic too. As I mentioned previously, I often think there are more constraints around topic in academia than people realize. Certainly in psychology, if you had, for example, not been using neuroimaging over the last 15 years, it may have been more difficult to secure funding and attract top students. While you are still free to investigate your topic of choice, it is a more difficult proposition if that topic is not “fashionable.” While I am not free to choose anything I like to work on, I can go and sell my labor elsewhere if I don’t like what my company is working on. And there is a lot more mobility in industry than in academia. Because of the conveyor belt nature of academic positions, you don’t see people switching labs too often, whereas in industry, in the current employee-leaning market, people are free to switch companies quite easily. This enables you to work in quite a few different domains over a relatively short space of time, and many people expressly avail themselves of these opportunities; it’s not just a theoretical freedom.

Another measure of freedom is time; I’ve seen quotes like “In academia you are free to work whichever 60 hours in the week you choose.” And yes, it’s possible to organize your time slightly less around a traditional workweek in academia, but in industry, there rarely comes a week where one needs to put in any time in the evening or on the weekend.

A final measure of freedom is financial; it is well known that industry positions tend to pay better than academic ones. If you seek financial freedom and have the discipline to save aggressively, it follows that it becomes easier to secure financial independence in an industry career.

What do you like most about your work?

The opportunity to solve difficult problems that underlie a need my company has. The chance to contribute to initiatives that change the business and its approach and the time horizon to see those initiatives succeed or fail. Getting to collaborate with and learn from specialists in all aspects of what the business does. I also collaborate with team members from across the globe, so getting insight into conditions in different parts of the world is fascinating too.

What do you like least about your work?

There is very little I dislike about my work. After quite a bit of thinking, I'd say the only difficulties emerge when I have to deal with competing priorities for different teams or shifting expectations from senior management about goals and progress. Things do shift quickly in industry, which is exciting but sometimes leaves you having to scramble to re-focus efforts or spin up new things quickly. That can definitely be a challenge.

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

Well, first up, I think everyone's journey is different, and any advice you receive should be taken with a grain of salt based on the idiosyncratic path the advisor has walked. There's a lot of survivorship bias in academia and beyond, and so what "worked" for me or anyone else is also impacted by luck and privilege – positive and negative, seen and unseen – and one should always be mindful that the neat stories we tell ourselves about how we got here often conveniently ignore the role that both randomness and structural societal factors play.

That being said, I think that current PhD students who are considering careers both in and out of academia should spend some time getting to know people who are currently doing the jobs they are considering: postdocs and senior UX researchers, data scientists, and the like. Make a list of people you know who know someone in the particular industry, and start reaching out for the kinds of coffee chats and informational interviews I mentioned previously. This is a great way of getting a peek behind the curtain into what it is like to work in a given industry or profession and will go some way toward helping you understand whether your skills, interests, and experiences could be a good match for the things you see people doing in these jobs today.

Beyond that, if you are considering a career outside academia, start reading job descriptions now and figuring out what the terms mean. Skills you have will very likely match what hiring managers are looking for, but if you use academic terms to describe them, you'll risk having your application overlooked by either an algorithm or a busy recruiter who doesn't know that "structural equation modeling" is a technique that could explain why consumers in their industry behave the way they do.

Finally, all the skills building in the world will not matter if you don't build your network. Connect with people in LinkedIn, Twitter, and elsewhere, and get to know as many people as you can inside your chosen industries. Many jobs get filled via referrals, and the only way to make those happen is to get a connection to someone on the inside.

Thank you so much for sharing your experiences and insights!