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Announcer: This is The ORISE Featurecast, a special edition of Further Together, the ORAU podcast. Join Michael Holtz for conversations with ORISE experts on STEM workforce development, scientific and technical reviews, and the evaluation of radiation exposure and environmental contamination. You'll also hear from ORISE research program participants and their mentors as they talk about their experiences and how they are helping shape the future of science. Welcome to the ORISE Featurecast.

Michael Holtz: Happy Wednesday. Welcome to another episode of the ORISE Featurecast, where we talk about everything ORISE. Most recently, we've been talking to some of our research program participants, and today we are talking to Nick Byrd, who is a participant in the intelligence community postdoctoral research program. Nick, welcome to the ORISE Featurecast. We're glad to have you.

Nick Byrd: Thanks, Michael. Great to be here.

Michael Holtz: Nick, tell us a little bit about who you are.

Nick Byrd: Yeah, so my background is originally I was an engineering major, but eventually got interested in some kind of big questions and changed my major to philosophy, and then actually started studying some cognitive science. The engineering part of me has kind of remained. I'm really interested in trying to figure out how things work, but I guess I now apply that attitude to how the mind works, so to speak, or how thinking works, or how bias works and how de-biasing might work, things like that.

I've studied mostly philosophy, but also lots of cognitive science and neuroscience and computer science, as well, and upon graduating from the doctoral program was on the job market and saw this really neat opportunity with the intelligence community postdoctoral program at ORAU on Zintellect and coordinated with some people at Carnegie Mellon University to submit an application and have been doing that since 2020.

Michael Holtz: Awesome, so for folks who are listening, the intelligence community postdoctoral research fellowship program offers scientists and engineers, from a wide variety of disciplines, the opportunity to conduct research on a wide variety of topics related to the intelligence community. Nick, can you talk about the kind of research that you have been doing for the program?

Nick Byrd: Sure. We have been studying what the intelligence community original call... They termed it belief-driven thinking. You can kind of think of this as a series of cognitive biases, right? Whenever we encounter some sort of... To ask a question or something like that, we probably have some initial impulse or initial belief about it. You can imagine, like say in politics, what that initial impulse might be, and how that our past experiences and beliefs or identity even could be informing that initial impulse.

Sometimes these initial impulses are fine. In social settings, or when I see somebody's face make a certain expression, my initial interpretation of their face is often correct, right? We're pretty good at identifying faces and interpreting faces.

Michael Holtz: Sure.

Nick Byrd: But there's other impulses that we might want to check, maybe subject to criticism or critical thinking or something like that. This is something that we're interested in doing, in figuring out the easiest, most light-touch ways that we can help people reconsider their initial impulse and, if applicable, improve it. We're developing software that can help us study this in a controlled environment, at scale, online, which is something that's previously been impossible or else very difficult to do.

We're also studying how this can work in terms of the way you present information to people. You can present people with, say, just a wall of text to change their mind, or you can visualize the logic of the argument that exists in that text, so that they don't have to reconstruct it in their own mind, making it easier for them to understand the logic. We're studying the effects of that, as well.

Michael Holtz: Got you. Is the end goal to understand how that works, and then not necessarily change people's minds, but help them understand how they got there?

Nick Byrd: Yeah, so from a basic research standpoint, one of the questions is how does this process of reconsidering your original judgment and considering some reasons for other judgments, how does that work, in general? Then, what other parts of our reasoning environment might help us do that, right? One thing we're finding is that interacting with another person who disagrees with you is much more likely to get you to reconsider your initial response than if you just try to figure out a problem on your own with no one else there.

In a sort of applied research setting, we're interested in, like you said, how we can get people to think more critically or reflectively. I suppose that would result in people changing their minds, but we're not interested in changing people's minds in one direction or another, unless it's just changing it for the better, when there is a demonstrably better answer, right? I mentioned politics. It's debatable what the best answers are there.

Michael Holtz: Sure.

Nick Byrd: We also give people logic puzzles and math puzzles that are designed to trick them into a particular answer, and we try to see, do they fall for the trick initially? And what types of thinking and reasoning environments lead them to overcome that faulty intuition and come to the better response.

Michael Holtz: Got you, so it's more about the critical thinking and understanding how to do that better, as opposed to, as I said earlier, it's not about changing minds. It's more about understanding how you got to that initial impulse, and what could be, now that you're there.

Nick Byrd: Right. Right.

Michael Holtz: Putting it in a broader context.

Nick Byrd: Indeed, and I guess you can kind of imagine how this would be of interest to the intelligence community, right? You can think of the intelligence process as a very long process that starts with trying to figure out what the biggest and most important questions are, from an intelligence standpoint all the way to the President's daily briefing, right?

Michael Holtz: Right.

Nick Byrd: There's decision points all along the way, from the analysts who have to make certain decisions about what information to seek and what their evaluation of that information is, and then there's various feedback mechanisms within the intelligence community to shape the report before it ever becomes a final document.

Then there's decision points in the reception of that information, whether it's the President or some of the President's staff, or other people in other organizations. It's not always just the President who views these documents, right?

Michael Holtz: Sure.

Nick Byrd: Insofar as biases can impact all of these tiny decisions along the way, there's value in trying to figure out what could have been done to overcome any sort of undesirable outcomes of various biases. Obviously, there's only so much you can do, right? We don't have access to most of these people, but we can study some of the simple, light-touch interventions that might help improve the process.

Michael Holtz: Got you. Bias is such an important issue, not just in our conversation, but in the research and the information that's presented to us, which comes at us, as you know, fast and furiously every day, right? We are inundated with information, and there's bias in how it's presented, the perspective it's presented from, but it's helpful for us, I think, and it sounds like this maybe where the research is leading, it's to sort of take a step back and put it in context of stepping away from our biases and trying to step away from the bias of the presentation and be more clear in digesting and discerning the information that we, and I say we globally, but as people are receiving it.

Nick Byrd: That's right, yeah. Philosophers have been talking about this idea of reflection in almost exactly those terms. In fact, some of them have used that very metaphor of stepping back.

This idea of stepping back from an initial impulse to reconsider it is key in the history of ideas about how we reflect and maybe overcome our initial impulse, but it's also pretty key in the way we think about designing the tests that are supposed to measure this kind of thinking process, as well. I think you're right on.

Michael Holtz: Awesome. What happens next, in terms of the research? I mean, it sounds like you're in the middle of it.

Nick Byrd: Right. We are at the point where we've analyzed a large portion of the data and maybe have a little bit of data left to analyze, but the findings are already telling a pretty clear story. I guess I can share in broad strokes, because we're not yet at the stage of publication, but I think I've alluded to some of the things to you already. Just to summarize them all in one place, it would seem that, like I said, discussing something with someone who disagrees with you... You encounter a problem. It tricks you. Then you get to talk about it with another person, who had a different impulse. That situation seems to be producing the best results, in terms of getting people to change their initial impulse for the better, as opposed to changing it in some other direction.

Again, these are on the types of tests that have demonstrably correct and incorrect answers. When I say better, the discussion is better than trying to figure it out on your own, and it's even better than trying to figure it out on your own or discussing it with another person with a financial incentive for getting to the right answer.

Michael Holtz: Okay.

Nick Byrd: One short way of thinking about this would be saying that conversation seems to be better than cash, which I think, for some people, like maybe in economics, this would be a bit surprising, and maybe people in social psychology would think this is a valuable insight, that conversation could potentially, in some contexts, be better than cash.

Michael Holtz: Wow. That's an interesting concept, an interesting thought, for sure. Nick, let's talk about you for a little bit. You said that your background is largely in philosophy. Was science ever... Have you had an interest in science, technology, engineering, math, all of those topics?

Nick Byrd: Yeah, absolutely. My grandfather was an engineer, and I grew up, when I was very young, working with Legos and trying to just take things apart and rebuild them and understand all that. Then, when I was allowed to start using power tools, I would build things and break things and rebuild them.

In high school, I worked construction and things like that, and so I thought I might want to become an architect or an engineer, and I started studying that. It was in one of the calculus sequences where I thought, this is a bit more challenging than I realized. I think it was Calc two or Calc three.

I took a step back, to use that phrase again, and I just considered my other options. I remember, at the time, being also interested in understanding people. One question that I found particularly curious was why is it that we all have basically the same information and the same cognitive resources, but can come to wildly different conclusions about the world? And so, I began taking an engineer's lens to that question. I switched my major to philosophy and tried to figure out, what are the views that people have had over the time that we've been documenting these ideas in philosophy and in other ways? What are the actual arguments? Should I be persuaded to change my own views about things?

Then I started getting into the cognitive science of this, where you can use experiments and observational studies to better understand what it is that maybe attracts people to certain views or gets people to change their mind, if at all. That kind of led me down this road of studying reasoning and things like critical thinking, or what I call reflective reasoning.

Michael Holtz: Wow. That's amazing, and so here you are, working in this postdoctoral fellowship program and really doing some interesting work that really sort of fits all of your passions.

Nick Byrd: Yeah, it's been an amazing opportunity. The intelligence community postdoc program is something I would recommend to really any graduate student, who's approaching the job market or is already on the job market. Frankly, it's a well resourced postdoctoral program, more so than I would say maybe any other postdoctoral opportunities I know about in this country, and it is something that allows for enormous flexibility. In this program, there's no teaching responsibility, but there are... There's funding for things like travel. There's funding for the research lab. The person who advises the postdoc also gets resources out of this, so it's kind of a win for everyone.

Michael Holtz: That's great, and you're going to leave the program with at least some published work, right?

Nick Byrd: Right. That's right. Yeah, so we'll be submitting papers for publication very soon. Not only do I have the publications to go with this, but I'll have a wide range of experience, like we had to develop software with computer scientists, and that's something that not all academics have the luxury of doing...

Michael Holtz: Sure.

Nick Byrd: And presenting some of our findings at various places has been a really great way to grow the network, and not just in academia, but in industry, and even in government. It's been a very fruitful experience.

Michael Holtz: That's amazing. Nick, unless there's anything else I haven't covered, it sounds like you already answered my question about recommending the program for other postdocs. It sounds like that's a definite yes. Absolutely, be part of this program if you can. If you'd like more information, if you're listening, do a quick google search for the ORISE Intelligence Community Postdoctoral Fellowship, and you'll find more information about the program that Nick has been talking about. It sounds like it's been a great experience for you.

Nick Byrd: It has. I would just say that faculty also should maybe think about this. If faculty are looking for postdocs, but don't yet have a grant that allows them to have a postdoc, all they need to do is create a call for a postdoc that fulfills one of the needs that is on the Zintellect website or on... Sometimes it's posted to the ORISE website. Then, that would give them a way of getting a postdoc through the ORISE Intelligence Community Postdoc Program.

Michael Holtz: Awesome. Nick, thank you so much for your time today. I really appreciate it. It's been great talking about the work that you've been doing in your fellowship program. Thanks, so much.

Nick Byrd: Thank you, Michael.

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