

## Dr. Donald C. Wunsch: A Level-Headed Approach to AI's Promise and Peril

<https://mindmatters.ai/podcast/ep374>

Robert J. Marks:

Greetings and welcome to Mind Matters News. I'm your real intelligent host, Robert J. Marks. Our guest today is Dr. Donald C. Wunsch II. I'm Robert J. Marks II. They named me the second because they didn't want to name me Junior. I had an uncle named Junior and we called him Uncle Junior until he died when he was 90 years old. So they still called him Junior.

Anyway, Dr. Wunsch is an endowed professor of electrical and computer engineering at Missouri University of Science and Technology, where he is the director of the Kummer Institute for Artificial Intelligence and Autonomous Systems. He has a long title. Okay, you ready? Take a deep breath. He's the Mary Kay Finley Missouri Distinguished Professor of Electrical and Computer Engineering. Don is a widely respected voice in artificial intelligence and computational intelligence. Dr. Wunsch has spent decades working on the intersection of engineering AI and real world systems with research spanning neural networks, adaptive systems, machine learning, and AI engineering. He is a fellow of the IEEE, which is pretty impressive since IEEE only admits fellows, I think it's 0.1% of its membership every year. So it's a very high bar to reach, a very prestigious title.

What sets Don apart is his insistence on engineering realism over hype. While much of today's AI conversation centers on speculative futures and artificial general intelligence, or AGI, his work focuses on what AI can actually do today and the very real risks and responsibilities that come with it. He wrote a recent paper that we're going to talk about today. The title of the paper is Artificial General Intelligence Is Nowhere Near, Artificial Specific Stupidity Is Already Here--Policy Implications. His paper challenges both the techno-optimism and doomsday narratives, arguing that the greatest dangers of AI arise not from autonomous machines, but from human misuse, poor policy and concentrated power. We're delighted to have him with us today for a thoughtful and grounded conversation about AI autonomy and what engineers and society should be paying attention to right now in the area of artificial intelligence. Don, welcome.

Donald Wunsch:

Thank you, Mark.

Robert J. Marks:

We go way back, and one of the things that you and I did last century is we actually brought artificial intelligence and IEEE into Asia. We had two meetings. One was in Rostov-on-Don and that was an IEEE meeting. And if you remember, the funny thing about that was IEEE requires all of their papers be delivered in English. So we had all of these speakers come up and they were speaking in broken English because they were Russian. And all of the listeners were native Russians and they were trying to understand the English, so it was kind of hilarious. But then after that, we had a meeting in Beijing, China, and this was a big thing for IEEE. We actually brought IEEE and artificial intelligence, computational intelligence into China. But one of the things you did, which was very adventurous, I don't know if you would do it now, but you took the Trans-Siberian railroad from Russia to Beijing, and that must have been an experience for you. You lost some weight there, didn't you?

Donald Wunsch:

Well, I lost some weight before I got on that train because I had a problem adjusting to something that I ate in Rostov-on-Don. But yeah, it was fun to see you and Witali Dunin-Barkowski in Rostov-on-Don. We met him when he came to IJCN in '91 in Seattle. And between '91 and October of '92, when this conference was held in Rostov-on-Don, something remarkable happened, the collapse of communism in the former Soviet Union and the collapse of the former Soviet Union. And so we had a catbird seat to those events as we got there just after Yeltsin had stood on the tank, and it was a really exciting time to be visiting Russia.

And it was my first visit to Russia, and you might remember that I got stranded in Moscow for one night and stayed with the driver who took us between the two major airports in Moscow because my baggage had been lost and they promised to deliver it to Rostov-on-Don and our host told me, "You're better off staying with the driver than going to your hotel in Rostov tonight and make sure that you get your bags and personality see to it that you get them."

But anyway, we went to Rostov-on-Don, had our adventures there and you went back and I had taken several weeks of leave of absence to visit places because there had been an AI winter in the United States. It wasn't really an AI winter, it was a neural networks winter. The neural networks had been hammered down for a period of time by people who thought we were wrong. And these were the kingpins of AI who thought the neural network people needed to be defunded that we were barking up the wrong tree and needed to do things in symbolic AI and other things.

Robert J. Marks:

Yeah, they were proponents of expert systems, which is where you take expertise and kind of translate it into code. Isn't that right?

Donald Wunsch:

Right. And they were not doing garbage, but they were mistaken in thinking that we were doing garbage and we won.

Robert J. Marks:

We did win.

Donald Wunsch:

We sure won, we won big time. So now many of the same people claim that they were in our favor all along, but they weren't, and we know it. But there were some of the kingpins of AI who were indeed with us the whole time. And one of them was Yann LeCun, who I will mention during our discussion. He was one of the neural network people all along. Anyway, it was an exciting time to be in the field. Sometimes we had to fight for our right to party.

Robert J. Marks:

Okay, yeah, yeah.

Donald Wunsch:

So we had a good time working on neural networks and it paid off. And so sometimes you have to have quite a bit of tolerance for being told you're wrong if you believe you're right. And we had to put up with that for many years and those efforts paid off for a lot of people. And a lot of people abandoned it when the slogging got tough, but for those of us who didn't, there were some nice rewards down the line.

Robert J. Marks:

There were. And that's good news for us, I suppose. I remember when we were in Rostov-on-Don and Perestroika was happening, all the Russians were kind of broke. You actually brought the president of the Russian Neural Network Society to the United States. I think you paid him as an RA, didn't you?

Donald Wunsch:

So yeah, he was willing to come for a modest initial salary and I didn't have the funding to pay him anywhere near what he deserved because I was an assistant professor. And this guy had run an enormous lab in Russia and he was very experienced, very accomplished, a very prolific publisher. At the time, I think he was in his late 50s and me and my late 20s, I was ... No, I was exactly 32 when I took that job. Anyway, I felt like I was in my late 20s. And anyway, I just marveled that he could keep up with me. And now that I'm 64, I don't marvel at that anymore. I keep up with people in their 20th and 30s that work with me, so I no longer have that temptation to age-ism, but he solved that completely because he just had tremendous energy. And as soon as he got there, I told him, "I only have enough funding to start you and you find your funding." And he instantly found his own funding and he stayed in the US for a number of years.

And eventually he went back because they made him an offer he couldn't refuse. When neural networks took off, they gave him a new lab and they didn't care that he was 20 years older than he was then, and so he continues to be a solid researcher to this day about 32 years later and he's still going strong. So that'll tell us all something.

But anyway, it was, for example, the taxi driver who took me into his home so that I would not lose my bags, he was an engineer, but he was becoming a taxi driver because his employer was not paying any of their engineers. And so we enjoyed some sausages and some cabbage and some vodka and talked until about 2:00 or 3:00 in the morning and then got up in the early morning and went and got my bags and caught my flight to Rostov-on-Don where there was no one to greet me because everything that had been arranged, both in either Sheremetyevo or Domodedovo airport that I took off from and then going to Rostov, there weren't people who were strong English speakers, but I wound up next to a Cuban who, my Spanish is pretty good, so we were able to communicate and he helped me navigate and all that. There were some things to deal with.

But then on the plane, as we were sitting down, he told me, "When you're with a Cuban, you're with somebody very intelligent." I thought he was just bragging, but he meant to prove it. So when the stewardess came down with a rickety steel thing serving whatever she was serving, primitive by our standards, on this Aeroflot flight, he handed her my business card that said Boeing and said PhD on it. And he told her, I knew enough Russian to ... He was telling her, "This is Dr. Wunsch's first flight on an Aeroflot plane." And they all knew what Boeing meant. She dropped what she was doing, stopped serving the customers, took her cart and my card back up to the cockpit and one of the co-pilots followed her back, nodded to me. He sat in the jump seat. I sat on his seat the rest of the flight, including the landing in Rostov-on-Don.

Robert J. Marks:

Wow.

Donald Wunsch:

And you know from Rostov-on-Don, how spectacular that must have been because, now this was late morning, the sun was gleaming off of the golden dome of the Russian Orthodox Cathedral and you've got the sea there and the city there. And yeah, it was an experience of a lifetime that could never

happen post 9/11, but this was 1993, and so a really wonderful trip. And then going to Kiev and going to Moscow and then going to Novosibirsk and then the Trans-Siberian Railroad and showing up in Beijing and reuniting with you there in Beijing. And that was one of the streets were filled with bicycles, remember?

Robert J. Marks:

Yes.

Donald Wunsch:

So it was still an amazing bustling city, but it has completely transformed.

Robert J. Marks:

I remember during this transition, everybody was trying to sell stuff because everybody was poor. It's like the engineer that had to end up driving a cab. And I remember picking up some good deals, and I think you picked up a few good deals too. One of them was the overcoat for a Russian, I think a Russian officer.

Donald Wunsch:

Officer.

Robert J. Marks:

And that was, I got one, I think you got one, and they were like 20 tons because they were solid wool and they were like a, I don't know, a half inch thick, because it gets cold in Russia and we were able to pick that up for a song, but these people really needed the money. So what the heck?

Donald Wunsch:

Yeah, I had some fun with that coat. And I had the Russian hat that looks like grains, I still have that one. And so my last trip to Russia was in '96. I went '93 and '94 and '96. And I thought I would go back many times, but now we're going to have to wait for a better relationship. So I don't think I'll be back anytime soon. But you mentioned about I would jump at the chance to take the Trans-Siberian Railroad again once relations are conducive to something like that.

Robert J. Marks:

I remember you telling me when you got to the border, there were all sorts of stuff which was thrown off the train because they were afraid it was going to be confiscated.

Donald Wunsch:

Oh, well, everybody was sweating bullets. That's true. Everybody was sweating bullets. And I wasn't sweating bullets. I was fine, but people were really worried. There was one guy who said, "Would you mind taking the stack of coins?" And I knew what he was doing, but I said, "Sure, I'm not worried. I'll take your stack of coins."

Robert J. Marks:

He was trying to transfer blame, I guess, right?

Donald Wunsch:

Yeah. And so after we got through, I gave him back the stack of coins and he gave me a ruble that was from the 1800s. And I still have that ruble somewhere. But anyway, I wasn't worried. Maybe I should have been worried. I wasn't worried. But anyway, so I managed to get through the border between Russia and China.

Robert J. Marks:

Yeah, good for you. I revisited Russia, I went to Siberia actually, and I got one of those beaver ... I think they're made out of beaver, right? The hats?

Donald Wunsch:

Yeah, I got one of those too. Those are the warmest thing-

Robert J. Marks:

They are.

Donald Wunsch:

You've got to be below zero to wear those. If you wear them when it's 10 degrees, you're going to feel like you're in a sauna. You need to wait till it's below zero to wear one of those.

Robert J. Marks:

What you do now in Siberia, it was, I believe minus 15 degrees. So I went outside, I untied the little thing at the top of my head, put the flaps down, and my host there says, "You don't want to do that." It turns out that every society has their idea of what being macho is. And I said, "Why is that?" He says, "Because if it's 20 degrees below zero or warmer, you don't put those down if you're a man." But then later, he confessed to me that he was out one time and he didn't put his flaps down and he had a little pop in his earlobe and I guess his cartilage there froze and he said he didn't feel any pain until it thawed and then it really, really hurt. So everybody has their idea of what being a man is, what masculinity is in different societies. And that was the one that I did in Siberia. So that was quite an experience.

So let's get down, let's talk a little bit about technology.

Donald Wunsch:

Sure.

Robert J. Marks:

Before we delve into the contents of your paper, which I think is just fascinating, and I agree with it, tell me about the Kummer and the sort of projects you have. And by the way, the is spelled K-U-M-M-E-R. And we're going to provide on the podcast page a link to that center so you can see what Dr. Wunsch is doing. So tell me about what's happening at the Kummer Center and some of the projects that you have going and what your responsibilities are.

Donald Wunsch:

Yeah, so the Kummer Institute for Artificial Intelligence and Autonomous Systems is the result of a generous gift of our alumnus Fred Kummer, who built over a thousand hospitals and a hotel chain. And

he decided that he, as he got into his 90s, he'd given us many gifts before, big ones, but he'd decided that he could spare another 300 million to help us to advance in areas of strategic importance. And he also wanted to encourage entrepreneurship and he had several things and we did a lot with this. So 300 million sounds like a lot, but my cut of it is not huge, but that's okay. It's still a substantial bump up from what my endowment of the Mary Finlay professorship was doing.

And so it's a cross-cutting responsibility and that's really the excitement and the challenge of it. I report to the vice chancellor for research and really am here to encourage the development of AI through all aspects of the campus. And so I support that in any way that I can. I have one postdoc and two research assistant professors on my staff and support a number of graduate students and we help people to add a bigger component of AI to their proposals and also to establish a vision for AI for the university.

So there are a lot of aspects to that and I won't take us too far down in a deep dive of that, but what I will say is that website that you're going to link to, I would encourage people to click on the AI news tab of that website. And the reason for that is that I personally curate that news tab. I don't let hype-y things get through, but I do ... Even some of them are good, but are too hype laden. So I am looking for things that put AI into context and look at some of the interesting challenges to the field of AI.

But you'll find two of my contributions there, it's mostly news articles, but I do have a keynote that I gave in Rio last month, and I do have the article that you mentioned from the IEEE Computational Intelligence Society Magazine last month on there. People who work in AI have heard of Michael Jordan. I sent him that article because it cited him and he responded right away with a recent article of his. He said he agreed with everything in my article and he gave me his recent article from July that made the case that AI really needs to be cross-cutting across many disciplines, especially economics. And Marvin Minsky wrote about that. He had a book about economy of agents, AI, economy of agents, how these agents could interact much like an economic system. And Michael Jordan has refined that argument in a short paper that I put on the website as well.

But most of our news articles, New York Times, Wall Street Journal, and other sources, Times of India, there were a few that I liked, there's a number of sources that I grabbed and put these articles on there, and I do this on a multiple times per week basis. So instead of trying to sort through thousands of articles with some signal, but a lot of noise, this is a high signal, low noise.

And one thing that I'll put out as a teaser there is there's an article about a person who's so influential in AI that in separate visits, Elon Musk and Bill Gates came to him and they had to travel halfway across the world to come to see this guy. And there's a pretty in depth article about that guy. And I found it fascinating because I'd never heard of him before. I'm not going to say more about him, that's a teaser for your audience to find that article, but there are many equally fascinating articles on there, and I promise it will at least entertain you. So I would encourage people to look at that, the labor of love to me to provide this, and I think that people will enjoy it. You'll find a lot there to enjoy.

Robert J. Marks:

Okay, that's great. Do you want to share the website address just real quickly?

Donald Wunsch:

Yeah. C-A-I-A-S.mst.edu, and then there's a tab that you click, AI news.

Robert J. Marks:

Okay. Yeah, I believe, and I've said that, I don't know, 80% of the articles that you see on artificial intelligence belong to the National Enquirer, that they're so full of hype, they're actually fake news there for clickbait and magnifying their viewership.

Donald Wunsch:

Right. So 100% of them I thought were worth reading, and I think you and your audience will find that it's ... I hope that you'll be able to give it an A and it'll be an over 90% signal to noise rate. Yeah, so I think it's worth a visit.

Robert J. Marks:

Great. Thank you.

Announcer:

That's it for this week. We'll be back soon with more from Dr. Donald Wunsch. Until then, be of good cheer.

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