Exploring the Mind-Brain Relationship and Challenging Materialism

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Announcer:

Greetings and welcome to Mind Matters News.

Many people claim that everything that exists must be made of physical stuff. If it isn't physical, then it doesn't exist. But what about concepts like, for instance, the number three? If we believe the number three exists in a non-physical way, what are the implications on our understanding of the world and ourselves? Today we have Dr. Selmer Bringsjord to discuss his chapter on this topic in the book, Minding the Brain, titled, Mathematical Objects Are Non-Physical, So We Are Too. Here's your host for today, Pat Flynn.

Pat Flynn:

Hello everybody and welcome back to the podcast. This is your host, Pat Flynn. And today I am joined by Dr. Selmer Bringsjord, who is the author of a very fascinating and provocative piece in the recent volume Minding the Brain. This piece argues for the immateriality of mathematical objects, and furthermore, the immateriality of the human person, or at least an immaterial aspect of the human person. And this has very wide implications in philosophical anthropology, obviously the nature of the human person, and opens up some really interesting avenues of exploration concerning post-mortem survival and the afterlife and everything else. So I'm excited to explore this fascinating argument today and to dive into some of the details of Selmer's paper. So Dr. Bringsjord, thank you so much for taking the time to be here. It's a delight.

Selmer Bringsjord:

Well, it's mutual. I'm very honored to be here and looking forward to our conversation. Thank you for the kind words.

Pat Flynn:

So in part one, what I would like to do is just hear a little bit of your personal background and what first got you interested in this area of research. And then I would like to just lay the foundation for this argument because this is, to my mind, I think this is one of the most powerful arguments for the immateriality of the human person. But it is a technical argument. It is a hard argument to understand. So I would really like to just present the general structure of the argument in the simplest possible terms starting out, just so people understand the direction in which we are going for the next three episodes.

So yeah, that'll be the plan and we'll stick to it as best as we can. But Selmer, if you wouldn't mind, give us a little bit of personal biography. Who are you, what do you do, and what got you interested in this area of research?

Selmer Bringsjord:

Yeah, sure. As far as I can tell, just recently read some psychoanalytic work about early childhood. I don't buy it, but it's fascinating stuff. So I mentioned this first because it's, as far as I can tell, that's the phrase I used. I don't know if before three I was interested in the mind. But I vaguely remember, but yet

undeniably it occurred talking to my mother at five about mental issues and the resurrection story, which I had heard about and so forth.

And it wasn't that long after I remember in school thinking about what these crazy things were. Definitely in second grade I remember I was a troublemaker. I know this sounds preposterous and certainly will anyway to some people, but the nature of these mathematical things we were doing with addition/multiplication, and now I enjoy talking to my oldest granddaughter about this who's just about to turn six, and it's amazing how far you can get. So I was always thinking about who I was and who these other wonderful "persons" were I was interacting within my family and fundamentally who we were. And then thinking really always about this math stuff, which I continued to be fascinated by. So I know this, again, sounds manifestly implausible, but it's for me very real.

So when I started to get, let's jump to algebra, when you're first introduced to that in the sixth grade, I had a wonderful teacher, Mr. Mucchio. And he was amazing as an entrepreneur educationally. He submitted a proposal to New York State as I recall, and managed to get funding for a group of students who would start learning math essentially on their own in a group. And today, this thing would be frowned upon to put it mildly. But there we were as a group first starting on algebra and having wonderful conversations. And I remember asking people in the group, my good friend Jimmy, and then Mr. Mucchio, "Mr. Mucchio, what actually is this stuff fundamentally? What is this? We have these equations and we have these variables. We're just playing games, manipulating physical stuff here on our paper?"

This is before the advent of computers in education. That started much later in first computer aided instruction, at least in a widespread way. Patrick Suppes is really the innovator of that, at least in the United States. Mr. Mucchio was very tolerant. I think most of the responses did fundamentally boil down to shooing me away, but I kept going on that. And then it really wasn't until my Spanish teacher, Mr. Ruyak, when I was getting ready to take the Spanish AP and he realized, "Oh my gosh, Selmer, I don't think you're going to do well on that. You really don't know too much Spanish, but you really know a lot it seems about Cervantes when he talks about weird logic puzzles. You really like to look at the abstractions there." And I said, "Yes, Mr. Ruyak, I'd like to talk about that." And I went to his house.

And he recently passed away unfortunately. And we started talking about the nature or the essence of this logic stuff that was going on here. What did it mean to say this proposition that we're looking at does not correspond to a physical object? Or this argument for, there are paradoxes in Don Quixote. This argument for why this is an absurdity because it leads to a contradiction either way. Where is that in the physical world?

And then there were some borderline, it was really intolerance. My teachers in high school, I think they weren't as tolerant as Mr. Ruyak. And so at some point in talking to Mr. Ruyak I decided I was either going to study something like this for purposes of law or maybe I would stick with it. And so really I've been thinking about the rudiments of this argument and the key issues in it. What's the nature of what I early on thought would all be covered by the phrase mathematical objects. I now use the phrase, and it's used in the paper in question logico mathematical objects because some of them are informal logic. What's the nature of those things and what does that imply about the nature of us?

I really can't come up with a stretch during my life when either I was intensely skeptical about these objects being non-physical or I was thinking, gosh, I think these objects are non-physical and that implies something deep about us.

Pat Flynn:

Yes.

Selmer Bringsjord:

And then if we continue with the boring autobiography, then I go to college and then things get really concrete because I happened to have a key professor as an undergraduate who wrote about this and had been thinking about this much more carefully, needless to say, than me. And then in graduate school that professor's own advisor at Brown University. So both at Penn and Brown, here I am starting to get deeply into the issues at a much more rigorous level.

Pat Flynn:

Yeah, that's fascinating. And I'm sure people are already beginning to pick up that this is an involved argument. There are many technical aspects to it, but here's what I like about this argument, and let me frame it from my own initial experience with the argument, and then I want you to spell it out to people as if they were seven years old because things will get technical here. But I think the general thrust of the argument is simple enough to understand, at least when it's presented in a certain way.

And what fascinated me about this argument is when you look at a lot of different arguments that are trying to set out more or less, that there's something about the human person that is non-physical or immaterial, a lot of them focus on, say, Qualia, the qualitative dimension, human consciousness and the hard problem of conscious stuff like that.

But this is an argument that's not really focused on that at all. Rather it's really focused on our power of reason. And that just utterly fascinated me because it seems to be more in line with a very traditional Aristotelian way of thinking about the immaterial aspect of thought. And then once I encountered certain contemporary philosophers, James Ross being the big one himself I believe was at Penn for many years. The way that he introduced the argument initially was very simple but very profound. I remember it just struck me with a huge amount of force as being really a quite compelling argument that since I've thought about it for many, many years, I've only become even more convinced of its power. But what Ross would say is this, that all formal thinking is determinate.

Now, it's important to understand when we're using the term determinate, we're not talking about issues concerning free will or anything like that of determinism, we're talking about meaning. This is an issue of semantics. So when we say that formal thinking is determinate, we mean that it has a very unambiguous meaning to it. That's what Ross is up to. And we can give some simple examples to impress the idea here in a minute. But he says that formal thinking is determinate, however, no physical thing or physical process is determined.

Any physical thing you take, just take a triangle, right? It's always open to various interpretations. You draw a triangle on the board, what does it represent? Does it represent an isosceles triangle? A red triangle? Or to borrow an example from philosopher Ed Feser, does it represent the obscure forgotten pop band called Triangle? There's nothing about the physics of the matter that can lock down a specific determinate meaning, right? It's always to some extent ambiguous or vague and open to possible interpretation.

So no physical process is determinate as Ross argues. And he draws upon many great thinkers who argue exactly this, and it puts you in an interesting position. You can either, I think, bite an absurd bullet and just say that, okay, well I guess no thinking is determinant then, which leads to a host of absurdities. Or you can go the other way, which Ross does and just suggest, I think this is the only really plausible option, that no formal thinking is actually a physical process, right?

Selmer Bringsjord:

Right.

Pat Flynn:

So that to me is the general thrust of what this argument is about. And then there's obviously many further avenues of exploration from there, but I'm sure it's still probably a little bit obscure or vague to people. So how do you, Selmer, would you introduce it differently? How do you just like to introduce people to what this argument is about, give them the 10,000-foot overview if you will, so they can track with the further conversation we're going to have.

Selmer Bringsjord:

Yeah, no, that's great. When I alluded to a professor at Penn and then one at Brown, I was indeed referring in the Penn case to Ross. And then in the PhD case in Brown to Chisholm, Roderick Chisholm, my advisor there. But I should say I was always a little skeptical. I'm still skeptical to this day, that might be the wrong word. Both Ross and Chisholm flirted, Chisholm explicitly in publications, with the possibility that even in their minds, as open-minded as they were about such matters, persons could be physical things themselves. In the case of Chisholm, you could be a little tiny enduring thing that could survive your traditional death. And even when the worms started eating your body, this thing would survive.

I could never tolerate that flirting because I had already found at least two of Descartes arguments in modern form rigorized to be quite powerful for outright immateriality of the person. So when Ross shows, and he does, and you're right, I piggyback on it directly and say so, that thinking is immaterial. Well, that's one thing. That actually does relate to today's treatment of consciousness in different forms. Because property, property dualism with respect to thinking, with respect to mental activity, mental states and so forth, mental attributes. There are a lot of people who can't go all the way and say people are non-physical fundamentally, but they'll say, well, attributes that you have, those things can't be identified with any neurophysiological states and so forth.

So I wanted to extend Ross and say, all right, once we get to where you got to, Professor Ross, then we have to consider what's the nature of the thing that's doing the thinking. The thinking, I think you're right and he does cite contemporary analytic philosophers in support of the determinateness that you point to. But I wanted to get all the way there and see if the argument could be extended. And that's what Naveen and I purport to have done, at least in step one in the paper.

But you ask also boil it down, I think you said for a seven-year-old. Well, it's real easy. It's real easy to get off the ground with... I don't know. Well, yeah, I would say with indeed a seven-year-old. So all you have to do is say, "Are you studying any math in school?" Of course, there'll be giggles and maybe fidgeting and so forth. "Yes.", "Okay, where is some of that stuff you're using? You got sheets, you got web pages, textbook, where's the stuff on what you're learning in arithmetic?", "Oh, I'll show you."

In the case of my granddaughter will be more far, which is the mother's father for grandfather on the mother's side. And we started to do this. "Oh, okay, so this is great, Dagny." In my case, that's the granddaughter. "This is wonderful. I love this. Two plus two. If I have two things and two more things, I get four things.", "Let's see where it says that here." You go to the book, it says two plus two is four. And then you ask go, "Where is that?", "What do you mean that? What?", "No, where's the four?" And then it's, "Well, there are four apples here in the picture.", "No, no, no, no. The four, the symbol here. Where's that?", "It's right there in the book.", "Are you sure? Because can't I write it the same thing like this? Two strokes plus two strokes equals four strokes?"

You're absolutely right. If you try to come at someone who's not seven but 47 with a PhD in whatever discipline, say you should be a duelist or something like that, because of consciousness, their first thought is consciousness? Millennia had been spent on trying to figure out what that term or something like that term means. But four? So you show me where the four is, and of course this is a dead end.

They're not going to be able to show you where it is because you can write four. In fact, if you look at the inscription, the physical inscription in an infinite number of ways. Minimally, you can write it in as many ways as you have configuration of physical objects to make for an embodiment.

And that's a big problem right off the bat. If you can't say where it is, now you really have two alternatives. You can start to move towards saying, oh my gosh. The thing itself might be embodied in multiple ways in the physical world, but the thing itself would be abstract and non-physical. And Ross and Chisholm and many other folks, Chisholm aggressively across his work, held this as a basic first result in trying to set out any deep physics or metaphysics. He didn't really like to make a distinction because he thought that all good physics would have to commit to philosophical positions. So he regarded the whole thing to be at a deep enough level philosophy.

But that's how you start with a seven-year-old, and that's only for the number four. Then you can get a little older. You say to the child, "Hey, you got a number line anywhere here? Do they tell you that some of these numbers keep going?" And they say, hopefully, if they've been paying attention and working hard, "Well, sure." And if it's the granddaughter a couple of years down the line "Mofar, yeah. It's 1, 2, 3, 4", and it continues forever. And I've been doing with her the... You can tell I torture my grandchildren. I'm sorry about that, at least intellectually.

"Give me up to 10. Can you?", "Sure." And then at the age a little bit later it's, "Yeah, Mofar, it says it keeps going." And then you say, "Well, where is that collection of stuff? Where is that?" And of course at too young in age, this is totally mystifying. But later on, when you get to the sixth grade that I talked about, the sixth, seventh grade, when we have to, at least in the United States, we are supposed to sneak in explicitly Algebra. And then you realize, but if I'm solving for X, I'm solving over a general set that is, oh my gosh, infinite. Where could that be? That's going to be hard to find because most physicists, I'm not in that camp, but think that even the entire physical universe is finite. So where would that thing be?

So the first choice is to start leaning toward, uh-oh, this might be non-physical. The only other choice ultimately, I don't know if you agree, would be to say it's all just fake. And we are just stipulating that these are the symbols we'll use and what's fundamentally a game. And that doesn't go over too well with people who do formal things. Do things in logic and mathematics, which is reflected in the fact that most mathematicians to this day, not applied, but most mathematicians in the pure sense and logicians are platonist and they're inclinations, if not outright platonist. Which means, right, they have to accept the reality of the non-physical nature of these things.

So that's step one to get the argument off the ground. And then as you know, you then have to ask the next question, which is, I admit, you said it's technical. This one is much harder to do without getting into some heavier stuff. What are you such that you can apprehend or understand how to use these non-physical things? Of course, you're using their embodiments, but yeah.

Pat Flynn:

Yeah. So that's excellent. And maybe just to offer another illustration to facilitate thought on this, just think about triangularity, right? Which we take to be a universal. And for people who are unfamiliar, universal is really just a similarity between forms. And you can ask the same thing where is triangularity to a young child? And you might draw a couple different triangles on the chalkboard. But again, as you can quickly point out, none of those are triangularity, right? They're particular triangles that are always to various extents, imperfect at best approximations, right?

Selmer Bringsjord:

Yes.

Pat Flynn:

And when it comes to the nature of formal thought, you suggested that there are various ways that the physicals can try to respond. And they could try to bite the bullet that we just never really have any determinate or exact or unambiguous thought or formal thought processes. That's not just absurd, but it's self-defeating. To say that we never really think about triangularity assumes that we are thinking about what triangularity is to deny that we ever think about it, right? It's always, it's already there, it's already in the background. Or that we never engage in affirming the antecedent or modus ponens, right? Would really just render any potential argument structure for that conclusion, immediately invalid.

So I really think you're stuck with accepting the non-absurd proposal or solution here. I know Ross throws out various retortion arguments to support that as well. And I want to say before you even extend the argument to make the case that the human person is immaterial, even step one is bad news for the physicalist, right? There's something immaterial "floating around." That itself is very significant. If you're a hardball physicalist, you should be very uncomfortable with just that, let alone the implications for the human person. So I wouldn't want to just gloss over the force that we already have on the table just from those initial reflections. Do you agree with that Selmer?

Selmer Bringsjord:

Oh goodness, 100% in agreement. And probably upwards of 25 times over the course of my career in the room, in a debate, what's quickly heading toward a debate with a physicalist or a materialist, just starting on this first question of what are we going to do with the objects that we're both thinking about and has been put on the table? I have noticed this is not just sanguinity because I'm not a physicalist. I have noticed that I think other people in the room in these cases when they're there, have as well that there is an immediate lack of balance. It's like you can feel it. Oh, yeah. I better start thinking about if I'm going to continue this debate, I need to start thinking about how much of a strong bite on how large a bullet am I willing to stick to? Because I have to admit this is going to get to the point where I can foresee it. Oh, darn, I'm going to have to say that everything is vague, as you pointed out earlier...

I have to say that everything is vague, as you pointed out earlier. Everything is indeterminate or it's just a game and we legislate mathematics. And yeah, you're absolutely right. We don't want to lose sight of that, the power of the first move, if we're opposing, as we both are, across the board physicalism.

PART 1 OF 4 ENDS [00:25:04]

Pat Flynn:

In part one, we provided a broad overview of this argument, which I find absolutely fascinating. To me, it has roots all the way back to Aristotle. It's a very unique argument for the immateriality of the human person. It doesn't really focus on consciousness or qualia, like a lot of arguments against physicalism tend to. Instead, it focuses on formal thinking. And it's a little bit of a technical argument, but we did the best we could to present it, at least its general thrust, in a simple way, in part one. So if you haven't listened to that episode first, please do so. It provided some necessary stage-setting for what we were going to do next, which is really dive into the specifics of Selmer's development of this article.

And so Selmer, it's great to have you back. In case somebody just decides that they want to skip part one for whatever reason, at least it'd be good to hear a little bit about you again, if you wouldn't mind, just a brief reintroduction of who you are and what you do, and then we can dive into stage one of your argument here.

Selmer Bringsjord:

Sure, Pat. Thank you very much. Good to be back. Yeah. So Selmer has been thinking about the intersection of mentality, or the mind, and formal logic and parts of mathematics generally in the computational arena for a very long time. And probably started giving thought to the general shape of this argument when he was quite young, but it was thoroughly incompetent, maybe because of his age, maybe in part because he wasn't sufficiently mentally endowed himself. And then the more I investigated it, the more I was convinced that there's something really sharp going on here.

And then when I got from the high school consideration of it to the college and graduate school level, where I was blessed to have two proponents of aspects, I think, of the argument, or parts of the argument, I started to take it more and more seriously. And then in my career after graduation, I've been able to articulate versions of it live in debate, in many conversations.

And this article, the one you allude to, the paper here, has provided an opportunity to work out many of the details. And then following on that, to try to make it understandable for, let's say, a general audience. If that doesn't work exactly, then Scientific American-level presentation. And that's where we are.

And as we know, the bottom line is ... So the argument goes, if it works, step one is these formal objects, logico-mathematical objects, are all the way from the number four to infinite sets, like Z sub plus, which students learn as the positive integers, the more complex things, and including algorithms, which are a big deal in today's AI-infused world, are non-physical. And step two is based on asking the question, "Well, if these things are non-physical, what is the nature of us," since we certainly seem to relate to them in predictable, deep, understandable, and profitable ways.

Pat Flynn:

Yeah. Yeah, that's a great overview. And just to give people a quick refresh or recap, this is an argument that was brought back on the contemporary scene by one of my favorite philosophers, James Ross. I think he's just an absolutely brilliant thinker. And he argues that all formal thinking is determinant. And we explain that when we're using the term determinant in this context, it's about meaning. We're not talking about debates of free will and determinism, but it's about meaning, that formal thinking has a very determinant or exact meaning.

And we use the simple example of triangularity. When we're thinking of triangularity, we're thinking of triangularity as such. But the problem, as Ross points out, is that no material thing, no physical process, is ever completely determinant or exact in its meaning. Any particular triangle drawn on a board is always open to a number of various alternative interpretations. What does it represent? Small triangle, right triangle, isosceles triangle, the obscure forgotten pop band Triangle, right? There's nothing about the physics of the matter that can nail down the determinacy of meaning that is required if we're really sufficiently reflective on the nature of formal thinking.

And so Ross concludes that, "Hey, well, that just means that formal thinking is not determinant." But you develop this argument differently. I think Ross's way of presenting is a good way just to introduce people to the general idea of what he's up to.

But what I'd like to do now, Selmer, is really focus on that first part of your article. And of course, I always love articles that the title is exactly what the argument is, devised very neatly. Yours is called Mathematical Objects Are Non-Physical, So We Are Too.

So let's dive in now, Selmer. If you wouldn't mind, let's start to think about that first part of your title, Mathematical Objects Are Non-Physical. And let's just assume that people are coming in with no background whatsoever here. So we should take our time to carefully define terms. What are we talking

about? We're talking about mathematical objects. And then what sort of arguments do you like to deploy to demonstrate that these are non-physical? Help us understand.

Selmer Bringsjord:

Yeah, sure. I'll give it a shot. We have to make a selection from among the array of possible non-physical formal objects, non-physical things, what I call logico-mathematical objects, to get off the ground, in order to make it digestible non-technically, right? We've got to do something. We can't just talk in abstractions about these objects. And you did a great job in that regard. You picked triangularity, which is awesome. That works well.

I now have come to the conclusion that, because of the nature of the real world, at least the real technologized world, that algorithms are probably the thing to turn to. Ross goes with predominantly what I happen to teach most, which is a so-called inference schema or a rule of inference. So for example, someone says, "If this thing is true, then that thing is true." And if the interlocutor buys into it ... Let's assume that's the case. And then the next thing that's said is, "Yeah, but in addition, this if thing, the first part of the if-then is in fact true. So don't you see that you must accept the then part," or what's called the consequent. And nine times out of 10, or 99 times out of 100, everyone, neurobiologically normal mature adults are going to say, "Oh, yeah. Yeah. I'd have to be forced to accept the consequent."

Now that's modus ponens. You mentioned the historical roots of a lot of this argumentation. That's pretty darn ancient, because Aristotle had a lot more than that. But if you took that away, if you took that general schema away from Aristotle, he's dead.

Now, I'd love to go with that and I'd love to go the Rossian route with that. And we do use one in the paper called modus tollens, but I have come to the conclusion, again, that algorithms are better. Why? Because almost everything you touch these days, if it's technological in nature, is running on the strength of someone turning algorithms in the abstraction into a physical thing that embodies the algorithm. And usually, the algorithms are sewn together.

So the algorithm we consider in the book is a very famous one. Okay, it's a sorting algorithm, merge sort. All it does, take in jumbled numbers, N of them. Maybe you could say letters. You have the background English alphabet. So the task here is ... Suppose I throw 10 letters at you, or 10 names, if we're going with the first letters. Tell me how you are going to make sure the output from receiving this input is a nice neat list, starting if there's an Albert in the list, starting with A, and then if there's Zabrowski, that'll be the last name, if we're going with names. A to Z. Tell me how you're going to do that.

And the beauty of this is even people who don't know about the great discovery of merge sort, quicksort, will say, "I can do that. Here, watch, I'll do it." And they start embodying an algorithm. And people who learn about how to build AI systems of any kind have to use algorithms, across the board.

Okay, great. Are you sure you understand the background algorithm, is the next question. I think so. Oh, okay. Write it down for me. Tell me what your understanding of what that algorithm is. If they get it right, and let's suppose they do, you can turn to their classmate or someone else working in the same domain, and say, "Well, you write down the step-by-step process." An algorithm is a step-by-step description basically of how you ... It's got to be finite. It's got to be well-defined, et cetera. You show me how you would express the algorithm. I guarantee you, in a classroom, they don't match up.

And then if you walk down the hall and go to some professor in computer science and say, "Hey, you know a lot about these things called algorithms. Can you tell me what your favorite ..." Or maybe since they're more learned, you say, "Well, you tell me how the most famous and still used algorithm for sorting these names works. Write it down for me, maybe on the whiteboard or type it for me." They'll

know about quicksort, which is in the chapter. And they're going to write down ... If they obey and listen, they're going to write it down. That's not going to be the same as the second person you asked.

So from the standpoint of instruction and understanding this is odd, are we ever going to stop? No, we're not. And now we're at the point where people, they might get promoted or not based on how well they teach things like quicksort. How do we make sure they're doing a good job in getting it across? How do we make sure the students really are learning it?

We have to face the fact that there are endless ways to physically embody this quicksort thing, but the understanding of it cannot consist, and this is part one in the argument and the crux, there has to be a relationship between the understander, the learner, the professor, or either of the two students, or the N students, and the thing that they are incarnating and demonstrating they understand. Well, what would that relation be? Is that a relation between them and a particular physical thing? Well, it can't be, because that would mean that someone understands and then someone doesn't understand. The idea is everyone understands genuinely when they understand the thing, which is quicksort.

Well, what are our options here? What would that thing be? Let's just pretend, nonetheless, that quicksort, the algorithm, the sorting algorithm that arranges these inputs ... Again, could be letters, capital Roman letters or Roman letters, could be numbers, could be a range of one to 30, all jumbled. If we say it's a physical thing, this quicksort thing, then we have no answer to the question of what is being understood here, because there are endless, infinite supply of physical things. That can't be it, right?

I mean, if the professor is going to be evaluated by the dean, I guarantee you that dean is not going to be bold enough to say, "Hey, listen, I have quicksort here. I wrote it down. Bring this to the students, or you show me a demonstration that he really does produce understanding in class at that." The response that would inevitably come back is, "Dean, that's a particular embodiment of the algorithm. That would be unfair." This is real, concrete, undeniable stuff that we have to deal with if we're objective, if we're rational. Of course, we're talking about intellectual domains in general here. We're talking about algorithms. But they're not just widespread, they're ubiquitous.

And every time you get your car diagnosed, if there's a problem, there are algorithms running in the background to figure out when the darn thing is plugged in, if it's a new car and all software-based, why are these warning lights being thrown? What does that indicate? That's going to be an algorithm. It's probably going to be the same algorithms, whether it's, in some cases, Toyota or Ford.

So this is concrete stuff. And again, the first step is there's got to be a relation or, non-technically put, there's going to be a relationship between the user of the concept, quicksort or whatever the general name is, and the thing. Could it be a relation between our learner or understander, the agent, and a particular physical thing? No, for reasons already explained.

So what do we say? We could say that no real understanding in a deep unshakable sense is taking place. And there are people who would say that. They tend not to be in the business of teaching in the areas that we're talking about. Or you can say, as we argue in the book, "Uh-oh, it's got to be that one thing, and that one thing is not located in space and time. That one thing is immaterial or non-physical."

Pat Flynn:

Right. Yeah. That's really good, Selmer. I wonder maybe if we could just get a little bit more mileage out of the triangularity example too because it seems like a lot of the things that you just said or argued would still apply. Draw an infinite number of triangles, right? Where is triangularity? Now you have all these particular triangles, but none of them are triangularity as such. And somebody might say, "Well, maybe we just don't understand triangularity. We're just thinking we do." And as we indicated in the previous episode, that, I think, extreme option really implodes. It's self-defeating, right? To deny that

you understand these things, to deny that you understand triangularity assumes that you understand the thing you're denying, otherwise you don't know what the heck you're even talking about. Right?

Selmer Bringsjord:

No, absolutely. And Pat, you know what? Thinking here with you about triangularity, I realize, I think, that it has advantages that some of the other specimens Naveen and I cite and use and some of the others that have come up in this conversation, is quite advantageous, quite revealing.

And the reason it strikes me is that if you go with triangularity and someone says, "Yeah, I can write a triangle down for you," and that's pretty much going to be it. That's triangularity. I'll write it down for you on my piece of paper on my desk. Some wise, clever but wise-ass student, as someone might say, "I'll write it down. I'll write a triangle, and then I'm going to step back and I'm going to point to it. And you know what? Professor or Pat or Selmer, that's it. It's right there." Well, I mean, maybe it's a family resemblance, but look, it's physical.

Well, actually, there's a big problem here. If you take that piece of paper, and if you're a droid enough and you start moving it so that it becomes a sphere ... Now, that's impossible to do with what's been written but we actually, of course, and you know this, we know that depending on what you write a triangle down on, a sphere, we're going to get a ... These are alternative non-Euclidean geometries.

So actually, triangularity, to have a deep understanding of triangularity ... Deep, as in you're studying some geometry in school, you got a classic high school math education, let alone college. Actually, you aren't even going to understand triangularity if you don't understand how the physical embodiment of what you construct or write down starts to morph the thing. And now you end up with the sum of interior angles being more or less than 180 degrees. You write it down on a sphere or globe or what have you.

So that just intensifies the dangers you get into in pinning things down by physical. You got to go back and look at the nature of Euclidean geometry, Lobachevskian geometry, and Riemannian geometry. And for a student in high school ... I don't think this is done, but if you got some, quote, "gifted students" or what have you, you want to tell them, "Oh, yeah, yeah, yeah. Look, the formal specification over here from Euclid, that's pretty close. That's the background for what you wrote down on the paper, but what you wrote down on the paper is still just an incarnation." It doesn't get at the background, true concept of triangularity, which is better expressed and pointed to by Euclid in these postulates and our theorems.

But then you have to say to the student, "Oh, yeah. You know what? Be really careful in thinking that physical embodiments, physical things, help you get at the nature of any of this." It's particularly true in the case of triangles because of some changes we can make in the underlying Euclidean specification.

Pat Flynn:

Yeah. And I just want to impress again that, first off, any physical embodiment is always imperfect. You might have to use some special equipment to discover those imperfections, but that's always going to be the case. But even setting that aside, they're always inexact, right? Their meaning is not determinate. No matter how neatly you draw it, put a triangle down on a piece of paper, it is always open to alternative interpretation. Somebody might think that it represents a yield sign. Somebody else might think that it represents a small isosceles triangle or what have you. So what we need to account for is the determinacy of meaning that we clearly have when we think about things like triangularity as such.

And part of the reason I said that this argument has ancient roots is you think of various philosophers, especially medieval philosophers, I think of somebody like Aquinas. They very clearly distinguish

between imagination and intellect and perceptual ideas versus conceptual ideas. And I think this argument tracks those distinctions in a very provocative and fascinating type of way.

I love your example, Selmer. And the only reason I keep coming back to triangularity is just for pedagogical purposes. I think you can, of course, develop this argument more rigorously with the more technical examples. But my purpose, my hope, is to help people really just get the basic understanding of this argument and hopefully really feel its force.

And again, not to jump ahead, but even this first step of the argument, as we mentioned last time, is very, very significant. Set aside the further step of whether we have an immaterial aspect. As soon as we've demonstrated that there is something immaterial out there, that's not a comfortable thing. It should not be a comfortable thing for anybody who's a hardball physicalist or materialist.

Even if you still want to claim that we're entirely physical, we just somehow relate to an immaterial thing, that's still really bad news for physicalism, right? That is not the sort of thing that any physicalist should be willing to entertain, which is why I think the physicalists who are committed to physicalism, hell or high water, who see the force of this type of argument, really just try to bite the bullet and just deny that we really have this type of understanding. But I think that that position, as we said earlier, Selmer, is not only absurd, I think it's flatly self-defeating. I think it's incoherent, and there's just no possible way of taking that option. So again, just trying to get people to understand that even the first step of this argument is very significant.

So is there anything else that you want to say? And I know there's obviously a lot more in the article. And I will, of course, strongly encourage people to get the volume and read the article because it's a very finely written article where you address various objections, go into much more detail. But here we're just trying to give people the basic idea or general understanding. So yeah, back to you. Anything else you want to say about this first stage of the argument?

Selmer Bringsjord:

I don't think so. What you most recently said there is really excellent. I don't have much to add. I think for what it's worth, autobiographically, what you say can be played out very quickly in discussions with people who do have the mindset of the thoroughgoing physicalist. And yet, at the same time, trade in concepts like triangularity or, for the algorithmic space, algorithms, they may get paid half a million dollars for coming up with better algorithms for how we have a new large language model before us and how we actually get to the point where we have a deep neural network. And it only takes a couple minutes in conversation with people who are of, let's say, that dual mindset, thoroughgoing physicalists, but yet trade in professionally the kind of things we're talking about, to ask the kind of question that generates step one in the argument. I mean, it's just not difficult.

And whether anybody believes it or not, I have witnessed some deep soul-searching that starts almost immediately. They can try to brush it aside and remain confident and resort to rhetoric. But I'm pretty sure, as you point out, Pat, that first step, raising it, even, has some power.

Pat Flynn:

Yeah. Obviously, I agree with that because I am prone to agree with myself fairly often, but the-

... to agree with myself fairly often. But the one last thing I want to emphasize before we hit pause, before we enter into the third part of our discussion, is that, yeah, look, in general when it comes to making philosophical arguments, it's usually a matter of just showing people what the cost is going to be if they're going to maintain their position. So you present an argument that really places attention within their worldview or the various commitments and then says, hey, here's how you can get rid of

this tension. Here's a range of options that you can do to get rid of this tension. And a good philosophical argument presents a very serious tension, and it limits the range of options. Where one option would be to get them to change their mind in the direction that you think is correct but leave them with another option, it is a very, very serious cost.

Now, sometimes serious costs can be embraced without outright absurdity or contradiction, but the thing I really think is true about this argument and why it's always had such a grip on me is I don't think the alternative option is really an option at all. It just doesn't seem like a cost that can be reasonably sustained.

PART 2 OF 4 ENDS [00:50:04]

Selmer Bringsjord:

Yep.

Pat Flynn:

It's really rare, honestly, that you find a philosophical argument with that level of force. There's a lot of good arguments out there, philosophical arguments that have various degrees of force. This is one that I've returned to over many years and think it's a serious contender. The only downside is it is a little bit technical so it's kind of hard to impress upon people who aren't totally familiar with thinking about these things, but some where I think you've done a great job so far in getting some of the basic ideas across. And for people who want to understand this better, I will point them, of course, in the direction of Minding The Brain, the excellent volume that's been under discussion, which features your article.

And if people want to just revisit some of the roots as well. We mentioned James Ross. I believe you can still find his original article, the Immaterial Aspects of Thought. I think people can just find that open access. And I know he develops this a little bit more as well in his very excellent book, Thought and World. So those might be some further resources that people can add to their own research project. So, Selmer, before we pause for part three, anything else that you want to say about, for people who are interested in this argument, of other resources that you have found helpful in understanding it?

Selmer Bringsjord:

No, that's great. I don't think so. So fantastic. Fantastic, Pat.

Pat Flynn:

I'm joined once again with Dr. Selmer Bringsjord to continue and complete our discussion on his wonderfully provocative article titled Mathematical Objects Are Non-Physical, So We Are too. You can find this in the excellent volume, Minding the Brain. I'm sure the relevant links will be provided in the show notes. If you have not already secured a copy of that, I would highly encourage you to do so. It is a truly excellent volume and I've had the great fortune to discuss the contents of that volume with many different authors. And I have to say I was really excited when I first got this book because I saw this article in there and, as I mentioned in part one and part two, I'm a huge fan of James Ross who is one of the contemporary philosophers who really brought this argument back onto the scene. I say back onto the scene because I think it is an argument that has very ancient roots.

And so I was very excited to see another development and defense of this argument because I've always found it to be just exceptionally forceful. It's a little technical, but in the first two parts of this conversation we did our best to simplify the argument and summarize it. And, of course, I'm going to

encourage everybody to go back and listen to those. I think they're necessary at listening if you want to get the most out of this final part of our conversation. But to just quickly summarize what we've been up to. We've followed James Ross in arguing that all formal thinking is determinate, and by that we mean that it is unambiguous in its conceptual content, but no physical thing can be determinant. And so Ross is going to argue, and many others following him, that formal thinking it's not material, it's non-physical.

And then what we're going to argue here is that this argument can be extended not just beyond the nature of mathematical objects or formal thinking but we can push it further to show that the human person, or at least some aspect of the human person, is immaterial as well. So, Selmer, welcome back. Thank you again for joining me. It's great to be able to continue this conversation with you.

Selmer Bringsjord:

Thanks, Pat. It's, needless to say three times over, a pleasure to be here with you.

Pat Flynn:

Yeah. It's always fun because we're recording it all at once, but a listener might listen to it over a couple span of days. All right. So very quickly, just so we can hop back into this efficiently, Selmer, I just want to reiterate again, and this is something that we said several times in the first two parts of the conversation, is that step one or phase one of this argument is itself hugely significant in terms of the grand scheme of things or the metaphysical big picture. Because if we've shown that there really is some immaterial aspect to reality regardless of philosophical anthropology or what we think the human person is, I mean that itself is hugely significant and it's something that should not make any physicalist or materialist comfortable.

So I just continually want to emphasize that because seen a number of people attack this argument, kind of at this second stage, but to me the horse is already out of the barn. If you're a physicalist, you really need to try and shut this argument up a lot sooner. To me the second step, the so you are too, concerning immateriality, I think it's right, I think it's ultimately correct but I think it's sort of icing on top of the cake, so to speak. So I'd like to just get your general thoughts on all that, Selmer, and then maybe we can begin to explore that second stage in a bit more detail.

Selmer Bringsjord:

No, that's right. As long as the icing is sufficiently delectable, I'm perfectly happy saying that the result of step two, which is of course that we are non-physical, is indeed icing on the cake. I think that fits. I think we really have three phases because if we agree with Ross and company, not only contemporary company but those going back historically as you point out, we would say that thinking is non-physical or immaterial. And that's awesome and that is needed here, no question. And we build on that argument. There are people who are willing to say that and not say at all that thinkers are non-physical. And this is something we talked a little bit about at the outset in step one. The late Dale Jacquette was actually a philosopher of mine, someone I have great respect for, was someone in this position.

We had some conversations about this and he wrote a little philosophy of mind book that was lucid and pedagogically sound, but it was deceptively sophisticated because it conceded at what would be undergraduate consumption level. You know what, I'm a property dualist, I think thinking and stuff like that is non-physical. We build on that and then we say next. Now the objects themselves that you're thinking about are going to be non-physical as stage two. And I think Jacquette and others are reluctant to say that transfinite numbers, the set of all positive integers if it's smaller, inference schemata algorithms, I'm not sure they'll all go there after they admit that this mental activity is non-physical. So Descartes would be unhappy. I'm not sure what Ross, I really am not sure. I think Chisholm, who Ross

studied under... One of the reasons I went to Brown was to study under Chisholm following essentially in the footsteps of Ross.

And by the way, Chisholm told me, "Don't do this," "Don't study that." It was a very harsh start because of sort of market forces that he was incredibly prophetic about. He predicted that AI, CogSci, and all these things would connect to philosophy in much more vibrant ways. And literally, thank God I listened to them. But then the next step is what we're talking about now, which is that we are two phrase. What are we? Well, we have to be non-physical. So thinking's non-physical. The things we're thinking about therefore have to be non-physical for the right things. And then the thing doing the thinking about the things that are non-physical is itself non-physical. That's the chain. And you're very right and much more in command of the history here than I am, but you're certainly right to point out that this is sort of a wonderfully luminous thread of thought that goes back a long ways. And philosophy has these things, that's what makes it great in many ways.

Pat Flynn:

Yeah. And just to give people an idea of the historical roots of this, we've been using this triangularity example for a while to illustrate the general thrust of the argument where if we think about triangularity as such, it doesn't matter how many triangles you draw on a chalkboard, any particular triangle that you draw is always imperfect. It's indeterminate. It's always open to alternative interpretations. It doesn't lock down the precise determinate meaning that we clearly have when we're thinking about triangularity as such. And when you think of medieval thinkers like Aquinas. He's got a sort of wider metaphysical system that he's operating in, but any material thing is any sort of bounded individuated entity. And his link here, as I understand it, is that when we think about triangularity as such, it can't just be any sort of particular physical thing in the brain, a brain process or anything like that because then you just run into the same problem.

You're not going to have the thought, the understanding, and we are talking about understanding here perceptual ideas not perceptual ideas, of triangularity as such. So this ultimately, at least him, is to say at least minimally that because of our intellect, the intellect is immaterial. Now, again, this might mean that you have to take on wider sort of broadly Aristotelian assumptions of understandings of matter, which are a little bit different than contemporary understandings. But I think when you link this sort of arguing up with a system like that, you can build that chain out, I think, pretty rigorously. But you do it in a little bit of a different way, so I just wanted to tease some of the historical roots that I see, but we're going to focus on your kind of contemporary formulation at this point somewhere. So please take it away and help us see the chain, build the chain all the way through for us if you don't mind.

Selmer Bringsjord:

Yeah, sure. Before I do that, if it's okay, I don't know if it's okay. So you mentioned Aquinas, and totally on target. And Ross was, well, it's obvious to anyone who has some command of the background here that he was, even sight unseen for the literature in question, a devotee and a scholar of Aquinas. But I remember Ross said once the thing about Aquinas is he was, and I am paraphrasing but I'm pretty close to verbatim, Aquinas was really smart. He was so smart that he would make inferential jumps that worked, but skipped over a lot of the details.

Pat Flynn:

Sure. He's not the only one that said that of Aquinas, right?

Selmer Bringsjord:

Yeah. Extremely charitable. So, I mean, the irony here is really interesting. It's like, "Well, professor Ross, I thought we're in the business of working out those inferences." "Oh, yeah, yeah, of course we are." But to see whether it's valid or not. Well, yeah, yeah. Of course we are. And that relates to the argument we're talking about here. So he really did like Aquinas. And more than liked, he was a great scholar of Aquinas.

Pat Flynn:

Yeah, yeah. And I love that comment. I would just remind people that, again, Aquinas was operating with a very broad, very thick and rich philosophical systems. There's also just sort of a lot of in the background for Aquinas that it's just not in the background for us as well.

Selmer Bringsjord:

Right.

Pat Flynn:

And it's important to kind of understand that and spell that out if you're going to get him or really any historical thinker right. That's just sort of the necessary project that you always have to try to-

Selmer Bringsjord:

Absolutely.

Pat Flynn:

... engage in. But that's a conversation for a different day. So, yeah, back to you and your development of it.

Selmer Bringsjord:

Yeah, yeah, yeah. So the line of reasoning to get to the point which is the focus here in part three, which is going to be the final step. There are two in the paper, but you've opened our minds actually historically to at least three and more. But the final step is we are non-physical things. So the question is how do we get to the point where we want to consider how to make good on that final step? So in step one, to recap, we considered what could be going on, put Barbarically here, what could be going on when someone truly understands a fairly meaningful algorithm that's active in the world. And we went with Quicksort. Quicksort is the algorithm from Tony Hoare that is still used today in its variants. Takes an arbitrary set of numbers that are all jumbled up, integers, and then out comes a wonderfully arranged list. Of course, you have to decide what kind of ordering you want, but starting perhaps with the smallest up to the largest. We said we could do the same thing for letters in the alphabet, English alphabet.

And it's more pragmatic perhaps to talk about last names, which we always have to sort. Jumbled up last names come in, sort them alphabetically and Quicksort will do that. And this was really an amazing accomplishment that this algorithm was as efficient as it was. So how do you make sure someone understands the algorithm? And what we've seen is if they just, as you pointed out in connection with triangularity, same kind of deal, if they start saying, well, I got it because, look, let me show you how I can work through the algorithm as I wrote it down on this piece of paper or on this dynamic web page with this little app going here to show you the process. So don't I understand it? Well, not so fast. Not so

fast. You understand it when you understand the background deep concept behind all these physical incarnations, that's when understanding arrives.

So we ask the question, okay, are we really sure we can't have understanding by virtue of the fact that the would-be understander stands in some relation to a particular artifact or embodiment? And we came to conclusion, no, there's no way. There's no way there's understanding there. So our explanation for there being understanding, which as you point out already packs a bit of a wallop for physicalists and materialists, or not for them but against their worldview, is that no, there must be this thing out there, Quicksort, this abstract type that's non-physical. So now we have to get down to brass tacks and figure out how we get from the result of step one, which is that, to our nature as non-physical things. And by the way, I'm not saying we don't have physical bodies. This isn't some kind of absurd position that the physical world is unreal.

Or at least that we're not in part in command of bodies. We have hands, we have brains, we can use them, but they aren't us. When I say we are non-physical, the result of the next step, what I'm saying is we as persons, we as the kind of amazing entity that can reason, deliberate. Maybe we're not happy when we close our eyes. We think about the kind of thing we are ethically, maybe we're not happy with it. This kind of thing is a person. And I'm saying that we're saying this is a non-physical thing. Well, we get the next step done by turning to, by any metric, another titan in a different quarter of philosophy. And that's John Searle, that's where this changes very much.

Pat Flynn:

Yeah. Real quick before we go to Searle, and I love that you incorporated Searle's thought into this, very influential and brilliant thinker in his own right, just to maybe help people understand sort of what we mean by understanding. I'm going to use the Triangularity example again. I'm just using boxes and boxes of the triangles in this conversation. This again tracks all the way back to the classic distinction between perceptual and conceptual ideas, or even the difference between imagination and understanding. So we don't image triangularity. We image particular triangles, but we understand triangularity. And there's certain things that we understand that we can't even image.

I mean, think of a shape with a trillion sides. A tarragon, right? We understand that, but try and form an image of it. Yeah, good luck. I can't do that. So not everything that we understand can be imaged. And there's clearly the space of reasons is richer and wider than the space of physical causes, if you will. So this again is a distinction that's very ancient that this argument, I think, is leaning into even if it's not always made explicit. But I think triangularity helps here, again, because something that we very much understand. Again, the sort of denial of understanding it, as we argued before, is ultimately incoherent and unsustainable. But don't mistake that for thinking that we can image something. So I just wanted to put that clarification out there before we move further, just might help people.

Selmer Bringsjord:

No, that's great. For many reasons returning to triangularity, however many times it takes, is wonderful. And I've already said that, we looked at some of the reasons why. But in addition to what you just said, a sort of warning to people who would explore the territory we're in, I think, is extremely wise that we can't assume we can image or draw or such the thing that we understand. Everyone actually already knows this, but few people perhaps take account of it at least with sort of sufficient focus and clear-mindedness. What I love about part of Leibniz's modus operandi, the great example here that fits what we're talking about is the calculus. So certainly filled with very interesting logical mathematical objects that if you take them away from the human race, they aren't going to have a mission to Mars that works, right? I mean, this is for motion, for things that move and change.

Also true of economics where you're looking at phenomena that don't center around physical things moving. You take these objects away from the thinking of the agents doing the stuff, you're dead. Including the computational artifacts that process the information. But the amazing thing about Leibniz's stuff and the calculus is his notation has not only survived, it is the staple. Here I am, I'm on campus at RBI. If I go find a calculus class, I can walk into that class and in the worst-case scenario look at the textbook sitting on someone's desk and say, "You mind if I open this up and show you how Leibniz imaged and drew some deep concepts that are in the background of the calculus?" Now, in his case, what's great and connects to what you said is that the notation is suggestive at a conceptual level.

It's not that the image is the thing. Leibniz was great because he just... Crazy publication plan in his case here, fortunately we're talking about people who were wise enough and organized enough and smart enough to get a book together. Leibniz would just write this stuff down on pieces of paper, wonderful drawings and stuff and notation, and throw it into a cabinet and that was the end of it. So thankfully, we have his correspondence and people are still excavating what's in the cabinet. But you're very right about that. So what you say about understanding in the sense that specifically it can't be counted upon this thing that you understand to be imageable and drawable.

Pat Flynn:

Yeah, yeah, yeah. Very good. Glad we just got that point out real quick. All right. So to swing back around then, you just brought up Searle.

Selmer Bringsjord:

Indeed.

Pat Flynn:

So explain how you incorporate some of his famous thought experiments in the development of your argument.

Selmer Bringsjord:

Yes, sure. Well, there are people who have forgotten in AI today, or maybe they've willfully forgotten, that in 1980 Searle caused an absolute earthquake, because of my age I was there, I experienced it, in AI, in artificial intelligence. The field devoted to roughly building computational artifacts, that's where the artificial comes in, that have a level of intelligence that at least approaches what we see in the human case. So Searle says, in this 1980 paper, he says, okay, we understand a lot. As humans it's kind of a big deal for us, that's how the whole educational system works. I think we have this overused, overheated term now in AI. Machine learning this, machine learning that, deep learning, everything is learning. Actually, none of it is learning in the sense that has been explicitly in use for 2.5 millennia. So that's a big deal, Searle says. So let me ask you...

"That's a big deal," Searle says. So let me ask you, how does that actually work when we look at a machine? Because it seems to me that what your computers are doing as just moving symbols around, and I don't see how that could possibly ensure understanding, and that's just gentle.

And then he gets much more forceful and says, "I can show you that it doesn't amount to understanding. I will become a computer and I will manipulate symbols," and this is the famous Chinese room argument. "And when I in the room manipulate symbols," according to what he calls a rule book, "It will seem to people on the outside, for example, that I actually am a competent understander of Chinese." Because in could come what he calls squiggle squoggles, "The rule book says, do such and such with it, send back a new sequence of squiggle squoggles." People on the outside are like, "Wow,

this system understands Chinese." And Searle would say, "No it doesn't, I don't understand any Chinese," which was of course actually true. And far as I know is still true, he understood no Chinese. So this was the Chinese room argument. People not only forget about it in AI by the way, but forget that it appeared in behavioral and brain sciences, which has a venue type that allowed Searle to respond to all the critics. And he was just, by any metric, I think his replies were really quite devastating.

PART 3 OF 4 ENDS [01:15:04]

Pat Flynn:

Yes. Yeah. I think it is another very, very powerful argument that has withstood the test of time and many, many objections, right?

Selmer Bringsjord:

Oh, absolutely. So, all right, we have to ask ourselves about Searle's argument. So we affirm the argument, I've defended the argument repeatedly in print. I've actually defended it against some objections that Searle did not consider with some colleagues. So there's a very much a traditional scientific methodology going on in the article we're talking about because it's building on the shoulders of folks coming before and that's part of the essence of science. So all right, let's say as Naveen and I both say, and we both firmly believe, Searle has demonstrated that the mirror manipulation of symbols incarnated in a machine really is patterns of, ultimately, at the lowest level, patterns of electrical tokens that doesn't amount to understanding.

All right, so let's think about where we are in the overall progression. If we have Searle on hand here and this lesson, what could possibly be going on if we understand some logico-mathematical concept, if we understand modus ponens, we talked about modus tollens, which is in the chapter. If P then Q, not Q therefore not P, take that away. You eviscerate mathematics. If we understand quicksort, algorithm we've talked about, and if we understand triangularity perhaps in the main three geometries, Euclidean, Lobachevskian and Riemannian, if we understand that, is it that we understand it because we manipulate physical objects quickly and process them? Is that where the understanding is?

Because I mean, for the opposition, they don't have many alternatives here. So once we get to the objects are non-physical, but we understand them, we then have to ask the question, okay, well what does the understanding consist in, tell me in the real world, I'm over here, triangularity's out there, it's non-physical, what's going on here? How does it actually work? And if that person tries to appeal essentially to what now is the dominant response...

There's no question about this. The dominant response to this question today in 2024 is, you nut, you moron. Look at what's happening. Look at the world. Look at it, GPT-4, you ask it a question, you get it back, you ask it a question even about some things, of course, in mathematics, what are you talking about? You get the answer back, it understands. No, absolutely. And you see in the cracks that have appeared in whatever the reasoning that's required to supposedly demonstrate understanding has got to be accurate and precise and formal.

These things fall apart because they don't have in their data things of the sort that we're talking about. This is an empirical fact, GPT-4 does not have the formal Euclidean definition of a triangle. It literally doesn't have that. It's got pieces of data that don't relate to the logic of what Euclid came up with and was dealing with. But nonetheless, all I'm saying here is for this article, what we have on the scene right now only makes the whole thing stronger. There is no understanding on the part of these systems because of ultimately what Searle pointed out. Now, I tend to think, Searle may not agree, I tend to think with a number of others in terms of the history of this argument and philosophy and I have a TEDx

talk on this, and Leibniz said this before Searle. I mean, Leibniz said, "Look, you know what, you think thinking-

Pat Flynn:

His famous mill argument, right?

Selmer Bringsjord:

Yeah, exactly, exactly. It's the same idea, when you go into a mill, you see all kinds of physical stuff swimming around, a mill might not compete in complexity with what we've see in a deep so-called deep neural network but it's the same thing. What you're going to see if you go into it is little physical things being moved around extremely fast, and that's it. But that doesn't give you understanding.

So we can't be the kind of thing like that since we do understand the objects, the concepts we're talking about. And that's it. I mean, that's not... I mean, there's more to it and you've encouraged listeners to go to the article and I wholeheartedly concur, but that's it. So if you don't want to go to step two, your best bet is to knock down Searle, okay, good luck to you, because what's happening again in modern AI, contemporary AI is just... I mean, I don't know where Searle is. I don't know what he's doing. He's not perfect.

Chisholm, by the way, we talked about Chisholm. Chisholm used to quote Searle all the time because he'd say things like, "We need to have a level-headed... Let's just get a commonsensical level-headed take on the issue." And he rarely would quote people. He was fine with Aristotle, okay, Chisholm, but Searle in my recollection by far got in more than anybody else. So I think Searle, at least in thought here, should be sitting around, whatever, smoking a cigar, relaxing, and then looking at this crazy stuff that we see from modern so-called generative AI and thinking, "Wow, this is awesome." I mean, I just read this article over here where this person says, I asked it a dirt-simple question, and out of the blue it starts hallucinating and comes up with a cockamamie response and Searle's sitting there going or thinking, "Yeah, because it doesn't understand anything about what you're asking."

Pat Flynn:

Yeah, really great points, Selmer, and I love that you brought Searle's thought into this because again, I think it's very powerful and it's a good way to sort of bridge that gap or finish the chain that we were talking about. But it does really connect, again, I think very well with the sort of ancient thought, Aquinas thought that there's two ways a form can be contained in reality, one is in a material way, a particularized way and we've talked about why that is a problem if we're going to try to make sense of formal thinking through that. But it also says that form can be contained in a way that form contains form, in a material way. And that's what he says the human intellect is, right?

Selmer Bringsjord:

Absolutely.

Pat Flynn:

And I think that Searle's arguments can offer some contemporary reinforcement for that. And if you have a sort of wider, again, I would say broadly near Aristotelian metaphysics, great. It all links up really nicely actually. It's like a really great systematic account where we can account for a huge range of phenomena and data with I think a very powerful philosophical system that has some really smart, impressive people behind it and that stands up really well even today. So in terms of theory comparison,

I think if you incline in that direction, you're in very good company. And you can use the thought of thinkers that might not themselves identify with these philosophical schools of thought, to actually lend very significant support for them. Searle last I checked, was not a theist or a dualist of any sort, but he offers some of the best arguments against reductive physicalism out there. So that's great, the hostile witness of sorts. Yeah.

Selmer Bringsjord:

It is great and he was... He was, during my time of consideration of the Chinese room argument, Ed Brown, when I was a graduate student, he was, Searle, that is, was a Mysterian, really, the term... It's like, "Oh yeah, it's biology. I'm not going to tell you that I'm a dualist or anything like that, but it's biological." In other words, it's mysterious and okay, that's not really something that has a lot of explanatory power. So I'm not a thoroughgoing Searleian, but I would say, I'd add-

Pat Flynn:

He may be a property dualist. Sorry, I should qualify that.

Selmer Bringsjord:

Yeah, yeah, right. And this is all really... No, that's very good, and this is really all about, and I mentioned Jacquette earlier, Dale Jacquette, who was very much a property dualist, but he would not go to the much more important question for who we are, what can become of us, where do we come from and what is the meaning of life is, look, if there are some exotic mental properties that are non-physical, I don't think we need to get too worked up about that either way, frankly. But the empirical support that Searle is receiving from the just total unreliability of symbol manipulating systems of gargantuan size is to me also... So you're right about the additional warrants produced scientifically here by the theory having explanatory power, but you also have this empirical confirmation. Anyway.

Pat Flynn:

It's funny, you mentioned the empirical confirmation. I really do think the philosophical arguments settle the matter so much that even if you thought that these machines had understanding, that wouldn't make me a physicalist. I would just say, "Okay, great, a sufficient level of complexity has been reached that we have a new induction of a form." Aristotle could totally go with that. It doesn't prove physicalism, it just means we discovered something really fascinating and then we could just run the same arguments for these machines, right?

Selmer Bringsjord:

Yes, absolutely. But we both know-

Pat Flynn:

That isn't the case empirically, right?

Selmer Bringsjord:

Yeah. Well, we both know that it's not how it will go in the mind of diehard non-objective proponents-

Pat Flynn:

But that's how it should go, I think. So I would not rest this argument on those empirical claims because I don't think that ultimately decides the matter. I think you're right on how to assess the actual data of the matter, but if it were the other way around, I wouldn't suddenly swing against these arguments. I would just keep driving them through to the conclusion that, okay, we've induced a new form here by creating something so complex that... And that's sort of how the system works, that you can reach a certain degree of material complexity that disposes toward the induction of a new form if you follow an Aristotle, and that can happen. I don't really expect it to.

Selmer Bringsjord:

It's going to happen. I think it's going to happen behaviorally in the minds of a large number of humans. They won't know that they're being Aquinas-ish by doing it, but they're going to invoke this new form and they may even worship it. It's going to happen.

Pat Flynn:

Oh, that's an interesting thought. Now, all of that, of course, is a conversation for another day, but I think it just may be an interesting thing to put in people's minds. Of course, I agree with everything that you've said so far, Selmer, and I think you've done a really wonderful job in this article. And again, I have to encourage people to read it. There's a lot more detail in there, and you address other objections that are certainly of consideration. And that volume, once again, to remind people of the title is called Mathematical Objects Are Non-Physical, And You Are Too. And you can find that in the volume of Minding the Brain. I'm sure links will be provided in all the usual spots if you haven't already secured a copy of that. So Selmer, before we go, just any final thoughts you have and I would love to also just further hear what you're currently working on and how people can just keep up with you and future projects and all that good stuff.

Selmer Bringsjord:

Yeah, thank you. This has been sort of really positively wonderful, and the connection that you've made to things outside of what we discussed in the article is really cogent, deep and so forth. So I mean, I really mean that. I've done a few things like this, and my experience with Bob Marks was likewise. So thank you so much.

As far as today, well, right now I'm puttering around with my academic home page and about to bring up something outside of my university, but it's easy to find Selmer Bringsjord, there's only one as far as they know in the world. And if you see anybody with the name Bringsjord, other than someone in my family, they probably just took it from the spot in Norway, which is still findable in Apple Maps as Bringsjord.

But in terms of current stuff, wow, my wife says that I should make some changes now that I'm 65 and I should work less and work on less projects. And all I have to do is mention one name that I actually, as far as I know, have hardly ever mentioned in print because I don't want to jinx myself, and that's Thoralf Skolem a Norwegian logician. I think when he hit 65, he considered that some kind of graduation from high school, and now he gets some real work done. So I kind of feel the same way. And maybe tomorrow a meteorite will take me out, but I have a lot of projects going on.

And if I had to pick some that are connected to what we've discussed, maybe just pick one or maybe two. Well, I had the great fortune to discuss one really deep logico-mathematical conundrum with John McCarthy, one of the founders of AI, modern AI in 1956, which was the Continuum Hypothesis. And that had a huge impact on me. We actually had two conversations, and he was effusive, and he didn't like my

stance on AI, but that's... He liked the logic party, he loved that, which is why he was willing to talk to me.

So I'm working on the status of some of the very objects that are alluded to in this conversation or conversations and the article in connection with machines, whether machines can sort of convince us that they do have understanding, despite the fact that I know, and as you point out, they won't have understanding. So I'm doing that with a few really sophisticated things, including things that relate directly to the Continuum Hypothesis. So that's kind of abstruse.

Another thing, I mentioned two things,. Another thing is McCarthy did write a paper called Free Will - Even for Robots. And it's short, he thought that AIs could have free will. And I wrote a critique of that paper, and I had a chance to briefly discuss this with him. And it turns out John McCarthy wrote, but never published a fuller treatment of his position that AIs could have free will. It was a very deflationary sense. You can find it on his, he's deceased, find it on his website, which is still maintained.

So I'm working with help from people in my lab, you've got to have a roboticists for this to try to make, in some sense, free will correlate to human level, free will somehow semi-real in a robot. So it's not like I don't think AI is... Chisholm told me, "Selmer now that you settled on working in philosophy as it relates to AI," and that was the idea, right after I graduated as an undergraduate. So he said, "Don't do only formal logic, these logicians, if they're pure logicians, they don't get a job. You've got to connect this to something." And he made me go back and forth. So when I came back, I think the third time I came up with computation and AI, I knew a thing or two about it. He just said, "Yes, do that."

And the next thing he said was, "How much have you had? How much have you studied?" And I said, "Well, I've only had two programming classes." Like, "Well, I think you're going to have to rectify that." So then I started studying computer science at Brown. I took tons of comp sci classes and so forth.

So I want to see how close the actual AI engineering for a robot, a real physical robot, can get to implementing McCarthy's account of free will. So now warning, McCarthy was really, really, really smart and really well-read. So he did not think that his concept of free will was all the way there to what you and I enjoy, and I accept that a hundred percent. But, but there's a lot of interesting work to be done here, and I'm working on that, and I think, I hope that it leads to some cool explorations. I hope that I can follow through on Chisholm's advice, which was basically, "Selmer, if you're going to start spouting off about AI, which is what philosophers do, you might want to start studying AI itself."

Pat Flynn:

Wow, very, very cool. And I look forward to keeping up with that, and I'm sure many of the listeners will as well. So really appreciate it Selmer, this conversation has been an absolute delight. One more time, I want to remind people to, if they have not already, to grab a copy of Minding the Brain. Again, the links will be in the usual places. And finally, if you're enjoying this episode, if you've enjoyed this series, please consider leaving a review of the podcast. Whether you're listening on my show, I'm the host of Philosophy for the People or Mind Matters. It's always a joy to team up with the team over at Mind Matters, and they always throw such interesting guests my way, such brilliant people to talk with, and it's a pleasure for me. So Selmer, thank you again for this great conversation and want to encourage people to not only grab the book, but leave a review wherever you listen to podcasts. That helps the show grow, helps spread the word, and hopefully we can do this again soon. So thank you all. Thank you, Selmer.

Selmer Bringsjord:

Thank you, Pat. Thank you very much.

Announcer:

This has been Mind Matters News. Explore more at mindmatters.ai. That's mindmatters.ai. Mind Matters News is directed and edited by Austin Egbert. The opinions expressed on this program are solely those of the speakers. Mind Matters news is produced and copyrighted by the Walter Bradley Center for Natural & Artificial Intelligence at Discovery Institute.

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