Bill Dembski: The Power of Information and the Limits of AI
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Announcer:

Greetings and welcome to Mind Matters News. What is information, and how should our understanding of information inform, pun intended, our views on philosophy and the nature of reality? This week we have Bill Dembski joining Michael Egnor to break down what information is as well as the fundamental problems with any attempt to create an artificial general intelligence. Enjoy.

Michael Egnor:

Welcome to Mind Matters News. This is Mike Egnor from the Walter Bradley Center for Natural & Artificial Intelligence. I have the great pleasure and privilege today to interview Bill Dembski. Bill is a senior fellow at the Discovery Institute at the Center for Science and Culture and a distinguished fellow with the Walter Bradley Center for Natural & Artificial Intelligence. Bill has a doctorate in philosophy from University of Chicago as well as a doctorate in mathematics and a master of divinity degree from Princeton Theological Seminary. He's the author of more than 25 books, author or editor of more than 25 books, and his book, The Design Inference, is really a seminal book in the intelligent design movement. He has a new edition out of that book, which I highly recommend you get, and Bill is one of the most thoughtful and insightful people in the intelligent design movement. So, Bill, welcome and thank you for joining us today.

William Dembski:

It's so good to be with you, Mike, and thank you for the wonderful foreword that you wrote for that second edition. It's much enriched it, so thank you.

Michael Egnor:

It was a real privilege. Thank you. The book we're talking about today is a book called Minding the Brain, and the subtitle is Models of Mind, Information, and Empirical Science, edited by Angus Menuge, Brian Krouse, and Bob Marks. It's a wonderful book, and not just because I had a chapter in it, but it's a really great book about the mind-body relationship and looks at that relationship from all different perspectives. Bill's chapter is the final chapter in the book, and I think, in many ways, the most interesting. Bill's chapter is entitled How Informational Realism Dissolves the Mind-Body Problem. I've been wanting for years to talk with Bill about information because I think he's probably the leading information theorist in the world, particularly as regards natural science, and I wanted first to ask, Bill, what is information?

William Dembski:

Right. I think it helps to think of information more as a verb than as a noun. It's something that happens and it happens when possibilities are narrowed. So, if I tell you that I'm on planet Earth, I haven't really given you any information because you already knew I had to be on planet Earth. We assume that Elon Musk has yet to send people to the moon or Mars, but if I narrow it further and say, "I'm in the United States," that gives you information. If I say, "I'm in Texas," that further narrows it, and if I further narrow it that I'm just outside of Denton, Texas, that gives you still more information.

So, that's how information works. It's a narrowing of possibilities. In the paper in question, I describe it as a constraint of contingency. You need possibilities and then you need to constrain those possibilities.

It's a very, very general notion. Often when people think of information, they think of it semantically, that something has meaning, but you can think of meanings as themselves residing in a space of meaning so that you've got different possibilities of meaning, and then you have to narrow those possibilities.

The most widely known mathematical theory of information is Shannon information. What you have there are alphanumeric strings of characters and the mathematical properties of those, but again, you have this narrowing. When you have one sequence that's being transmitted, let's say as an email message or whatnot, you've ruled out all these other ways that the message might have been sent. And so, Shannon information likewise exemplifies this notion of narrowing possibilities or constraining contingency.

So, that's the fundamental conception about information. I think it's useful then to understand also how it arises. So, in different contexts, the information can mean different things. So, if I'm looking at, for instance, the meaningful claim, "It's raining outside or it is not raining outside," that doesn't convey any information semantically because it includes everything. You knew that it had to be true already. It hasn't narrowed down anything. On the other hand, if I say, "It's raining outside," that has narrowed down the weather from the other possibility that it's not raining, but if you look at for instance, those claims, "It's raining outside or it's not raining outside," versus, "It's raining outside," as written texts, the one, "It's raining outside or it's not raining outside," actually has more information because it's a longer sequence. It rules out more possibilities. So, you have to always be clear what is the space, as it were, the reference class of possibilities in which the information is happening.

Michael Egnor:

What strikes me about that, and I've been fascinated for years about what information actually is because it's obviously a matter of deep importance in the natural world. What I notice is that the idea of constrained contingency is very similar to Aristotle's concept of potency and act, that contingency is potency, the range of possibilities.

William Dembski:

Right.

Michael Egnor:

What makes something real, what makes something exist is its reduction to act, which is the constraint.

William Dembski:

Yeah.

Michael Egnor:

Do you feel the parallel is valid?

William Dembski:

Oh, yeah. I think Aristotle was a smart guy, so I think these ideas have a long history, and so, they can be expressed in different ways. That does seem to me a perfectly valid way of thinking about it.

Michael Egnor:

Yeah. Werner Heisenberg also pointed out that the collapse of the quantum wave form is kind of a manifestation of that same idea of potency and act or of contingency and constraint, that subatomic particles can exist in a superposition of multiple possible states. That becomes real, at least in one theory, by observation. So, yeah, it does seem that this concept of information permeates the natural world.

William Dembski:

Yeah. That's very true, and it permeates the intellectual, the cognitive world. I think it makes for deep resonances, provides a unity which I don't think you get from materialism.

Michael Egnor:

You discuss in your chapter, in fact, the, really, the essence of the chapter is the metaphysical perspective of informational realism. So, taking this definition of information, what is informational realism?

William Dembski:

Informational realism says that information is the most real stuff that we deal with in science, really across the board in our endeavors. I wrote that piece with really materialism as the foil because I think for the materialists, everything is ultimately matter, and then things have to be built up out of matter, including mind as some sort of complex organization of matter that works in certain ways.

So, what I was arguing is that information is the most real stuff and that, really, even materialism, in a sense, insofar as you can know what material entities are doing, it's that these material entities are disclosing themselves informationally. And so, in a sense, the information is more fundamental than the matter.

One illustration that I give of that is perhaps the most fundamental matter that we have discovered at this point. I think our physical theories will let us go further, but terms of the sorts of energies we have in physics to examine fundamental matter, it's this Higgs boson that was discovered in the last decade or so. What allowed us to say we've discovered that Higgs boson, it's not that we've somehow, in some sort of Democritean style, we've picked out something indivisible and are able to hold it and look at it. It's that we've hit some physical stuff with a lot of energy, and we've seen a characteristic scatter plot, which would be emblematic of that Higgs boson. And so, again, it's this contingency and constraint. It's this sequence of scattering, not another, and this one though tells us that we're dealing with this fundamental particle. And so, really everything, in a sense, what I guess I would say is that epistemologically, information goes much deeper than matter because matter itself always is disclosed to us in some informational way, this and not that, and so, that's the viewpoint.

One thing I also say is that information is, in a sense, ontologically minimalist. I mean, there's a sense in which this could be a material world that discloses itself informationally, but an informational realism doesn't require that nuts and bolts, metaphysics be material. Could be other things, and I think your predilection in your article is a kind of Aristotelian hylomorphism, if I'm understanding it correctly. I tend more in a Platonic direction, so for me it's ... I'm just fine with it being, as it were, information all the way down, but it's that information is the most fundamental stuff and that anything that discloses itself to us does it informationally, and I think that's exactly right.

Even physical theories can, in some sense, be entirely recast informationally. I mean, we think of a golf club hitting a golf ball. You can think of that entirely in terms of some sort of Newtonian mechanics, but you can also think of it as the golfer imparting information to that ball, trying to send it. So, now we even get some teleology into the hole as opposed to elsewhere. Then a random golf shot would also

impart information, but it would not be this sort of intentional information that would try to achieve that end.

So, it's a way of thinking about it. I think it has resonances with certainly Aristotelianism in many ways, and then I think potency/act is very much in that vein. I think the ultimate expression of potency/act is God's creation of the world. There were all these worlds God could have created and He picks one.

Michael Egnor:

Right. Right.

William Dembski:

So, it's the, in a sense, the vastest ensemble of possibilities and then the most narrowing of those possibilities into this actual world. It's interesting also how this notion seems to be resisted these days with quantum many-worlds, this whole approach of inflating the possibilities of what the world might be and giving them reality, whereas it seems that Christian teaching would be there is only one world. It's this world.

Michael Egnor:

Sure.

William Dembski:

This world may be a lot bigger than we suspect, but it's this creation, and so, there's not a parallel you, Mike, who is, well, instead of being a neurosurgeon, is doing something else. There's just you.

Michael Egnor:

Yeah. Maybe a Darwinist, yeah. Right. Right.

William Dembski:

Yeah. Well-

Michael Egnor:

That would be a very evil world, but the-

William Dembski:

There you go.

Michael Egnor:

Which brings up a slightly tangential question, but it does fit in. Do you believe that God knows counterfactuals?

William Dembski:

It's funny that you've raised that because I had written a doctoral dissertation on the logic of conditionals, which, basically, I'd submitted it, but I had a series of advisors who started falling off the map. One left the program. Another fell ill with depression, and finally the person who took over it left, did not get on board with it, but-

Michael Egnor:

Presumably nothing to do with your dissertation, I would hope.

William Dembski:

This is a dissertation I had to scotch, and then I ended up writing The Design Inference, but all that to say I've had some experience with that, and it's these counterfactual conditionals. I mean, you certainly have examples of that in, for instance, the Old Testament. David is holed up in a city and the ... Saul is on his way, and he asks, "If I stay, will the people of this town of ... " Is it Keilah? "Will they hand me over to Saul?" "Yes, they will." So, it seems that God does know counterfactuals, but I think there's got to be a kind of legitimacy or the possibilities being considered in the antecedent of the counterfactual need to, in some sense, be live, or there's got to be something that's ...

Contrast that with if John F. Kennedy Jr. Had not been assassinated in 1963, but ... and then decided to go to an ashram in India and started levitating, would he have been elected? He would've been elected president in 1964. Who's to say?

Michael Egnor:

Right. Yeah. Right. Right.

William Dembski:

I mean, it's like it's so far out there. God seems as suggesting that He knows certain counterfactuals. I wonder though, to the degree that God knows counterfactuals, it's also because if David were to stay in Keilah, then God would arrange it that he would be killed because he wasn't following. He asked God's advice what would happen, so, in a sense, God can actualize, can guarantee actualizing or making the counterfactual true if the antecedent condition is satisfied. So, I would say yes, but their truth status, I think you have to be careful there. The example I gave with JFK and joining an ashram and levitating, that's just way out there, and I'm-

Michael Egnor:

Right. It might be little too far out, even for God, but at one point in your chapter, you point out in comparing informational realism to Berkeleyan idealism, that Berkeley said that, "To be is to be perceived," and you formulated informational realism is to be ... is to inform and to be informed.

William Dembski:

Right.

Michael Egnor:

I think that's a fascinating perspective on it. Could you elaborate on that?

William Dembski:

Yeah. I've got deep respect for Berkeleyan idealism. I think he comes at an interesting time in the history of modern philosophy where he's responding to Locke. He doesn't go to the full-blown skepticism of a David Hume, but ... and I think a lot of the sort of conundrums with idealism, if a tree falls in the woods, well, does it still make a sound? Well, if you've got God in the picture, God is omniscient, omnisentient, so, I think you can keep a lot of the common sense ideas within idealism. I think you can make it work.

The problems I have with this is that it does seem ... It puts all the reality into minds, it seems. An example I give, and it was funny because I was watching, presumably with my kids, the animated version, not the 3D version, of Beauty and the Beast. I'm looking at Belle and I see her lock of hair. Every time that lock of hair moves, it's not that it's moving naturally. It's not that it has any sort of autonomy. It's that the animators had to consciously adjust it each time. It seems to me that's the sort of artificiality that, in my view, infects idealism, that because it's all in the mind, the mind has to make all these adjustments. There's not this sense of when God creates, God sets the world free. There's an autonomy that comes with it.

This is perhaps more of a temperamental matter. I know that one of my favorite philosophers is William James, and he has said that a lot of the views philosophers take, it's more temperamental. And so, I think with a different temperament, I may embrace idealism and make or perhaps even put informational realism under idealism, and yet there seems to be something. It seems that informational realism is carving out something a bit different.

I think, for instance, one of the things I consider is just how our words can create realities. It's interesting that the mode of creation in Genesis is God speaking the world into existence and organizing it with his words, so it's ... but we do this as well where we create our realities. We declare that something is money. Well, when I say, "We," it has to be people in authority, government, but it really is money. It is objectively money. It's also subjective because it lives in this subjective world, but it's really money. I pronounce you man and wife. Okay. You really are married now.

So, in terms of what the atoms, what the physicality is doing, that's ... We're a ride separately of it. So, I resign. Okay. Now I'm out of a job. So, these realities change. Again, I think that's something that's harder to reconcile, maybe not so hard in those cases with idealism, but still, there's the sense that we create realities. We can create realities with our words. This is Austin's notion of performative utterances, but that, it strikes me as resonating very nicely with this informational realism and perhaps less so with some of the other philosophical streams that I'm familiar with.

Michael Egnor:

My affection for the Aristotelian perspective, for the hylomorphic perspective, is partly just based on Thomism, which is sort of how I came to Aristotelianism and the fact, I think, that the hylomorphic way of looking at metaphysics dovetails so beautifully with what we know in neuroscience about the difference between the intellect and the senses, but I really feel that Aristotle was very much an idealist in a lot of ways. I think sometimes the distinction between the Aristotelian and the Platonic way of understanding metaphysics is overdrawn, that the reality is Aristotle isn't that far from Plato. For example, his concept of matter is really potency, which in potency itself is more of an idea than it is a physical thing. So, I kind of see Aristotle as taking idealism and forming it in a way that might be better applied to the natural world, but I still think of him as kind of an idealist. So, idealism is really my perspective with some qualifications.

William Dembski:

Interesting.

Michael Egnor:

What completely fascinates me that Bruce Gordon has talked about a lot, and I've heard it from other sources as well, is that when you look at the quantum world, there is really nothing that corresponds to matter as we know it. I mean, the Higgs boson seems to give mass to things, but the quantum world is very, very much an idealistic world that, for example, electrons are not distinguishable. It's not as if one

electron is a few micrograms different than another electron. It's more like they're ideas that are happening rather than particles that are flying around.

William Dembski:

Yeah. It sounds good to me. I'm not an Aristotle scholar. I mean, I've taught his ethics, and I agree he's a super genius. I think perhaps some of my reaction to materialism and perhaps also to some degree I'm conflating Aristotle with a more Democritean and more conventional, current materialism. That would not be fair to Aristotle, certainly.

Michael Egnor:

Right.

William Dembski:

So, I think to your point, again, I mean about the potency and actualizing that, that's ... Matter has a very different feel within Aristotelianism than it does in-

Michael Egnor:

I mean, yeah. For example, the qualities of matter, such as extension in space, I think Aristotle would see as part of the accidental form of a substance, but not part of the substantial form that ... What we think of as solid matter is kind of an accident for Aristotle, not necessarily inherent to the substance. The substance is potency and act, and which is conceptual as opposed to physical, so fascinating stuff.

William Dembski:

It is.

Michael Egnor:

You had noted that John Archibald Wheeler had ... who was a physicist, had described kind of an evolution of his metaphysical perspectives as he advanced in his career. He started out with thinking a lot about particles, and then he thought that, well, maybe nature is fields. Finally, he came to the conclusion that nature is information. Could you describe that way of thinking a little bit and comment on it?

William Dembski:

Yeah. I mean, he describes himself as having gone through these three phases. Everything is matter. Everything is fields, and then everything is information now. I think one way he characterized that is it from bit, but I think he didn't really take these ideas as far as he might have. I mean, I think part of that arose from his study of quantum mechanics, where you had these contingencies where things were then getting actualized. In those things being actualized, you were also then measuring them. In the act of measuring, it could be this size or that size. There was this yes and no. Then you can characterize really any measurement as a sequence of bits because these bits could represent numbers, and the numbers then could give you, to varying degrees of accuracy, measurements connected with something.

And so, when I've looked at Wheeler, I always thought that this was more of an operationalist notion of information, where it's ... Well, this is basically what we do as scientists when we measure things is we measure information. Okay? In some ways, that's true, but I don't think it really gets at the heart of things. In what sense is fundamental reality really informational? It's okay. We measure it

informationally, but so, his views didn't seem to me to go as far or be as radical as it might be suggested from when he says, "I have these three phases."

I think I also cite Paul Davies in that part of my chapter. Again, it seems that he's ... Davies is also pulling back a bit. Information is our best metaphor. It's for this current age. We live in an informational age, but I didn't ... I don't get the sense that he's going to be as radical as I'd like him to be about information. I mean, is information really the fundamental stuff? Is that what we're studying as scientists? Does it do things as they display themselves, as they present themselves to us? Is that fundamentally an informational act? I would say yes. I'm not quite getting that from Wheeler and Davies, and yet they use this sort of flamboyant informational language, which I think is helpful, and it got me thinking about these ideas more radically.

So, we'll see where this all ends, but, I mean, these ideas of information being fundamental, they've been out there for a while. I remember there was also a fellow named Keith Devlin, who is at Stanford. I've lost track of him, but I know, and I think it was in the late '80s, early '90s, he wrote a book in which he was just musing whether information is fundamental in the same way as energy, and ... but then, some years later, he pulled back on that. He got involved in some Stanford media thing, and then it was ... He was no longer going to go there. I remember seeing him at a conference in 2003 at Stanford, and so, some people have caught the information bug and stayed with it. I'm one of those, and others, it seems, have backpedaled.

Michael Egnor:

Well, I think certainly from my own perspective, the analogy between contingency and constraint with potency and act in Aristotelian philosophy suggests to me that there really is something fundamental about information, that it's a very profound topic.

How does informational realism help us understand the relationship between the mind and the body?

William Dembski:

Right. So, I mean, my point, really, then the article that I wrote for that book, in which you also have an essay, is dissolving the mind-body problem, how informational realism dissolves the mind-body problem. I think what's my point is that if you no longer give primacy to matter, I mean, because if you have matter, and especially in a mechanistic view of matter, that naturally leads to, well, you have to think of the mind, consciousness, and everything as being some sort of byproduct of matter in motion or matter in its various modifications, but if matter is no longer fundamental, if it is information, that's fundamental and that things disclose themselves to other things informationally and that things themselves are only understood by the information they exchange. Then it seems that you don't have a mechanistic reduction.

Information is not constrained by the speed of light. You see that information is exchanged by correlation. So, we see that, for instance, in quantum mechanics, when we have these ... what looks like action at a distance, where you measure one electron in one place when it was paired with another, and then instantly there are these correlations. So, we know that there's an informational exchange or there's some sort of common informationality going on there, but it's entirely in the correlation that we understand the information that's there. So, once information becomes real and not shackled to a mechanistic materialistic view, it seems that you don't have to think of neuroscience as being something reductively materialistic or that the brain has to be, a la Ray Kurzweil, a computational system.

So, one thing I do say, I mean, is informational realism, it's on ontologically, metaphysically minimalist. So, it could be that matter is, in the end, all that there is in the sense that all information expresses itself through matter and that the mind may just be this materialistic substratum, but it's not required. In fact,

I mean, I think that would be utter nonsense, but the ... From a materialist vantage though, what else could the mind be? I mean, there are no other options.

And so, that's why I really close that essay by saying, "If you're a materialist, there's only one answer you can give, but if you're an informational realist, you can let reality be what it is."

Michael Egnor:

True.

William Dembski:

If it discloses itself in mechanistic materialist terms, okay. Fine. Let's examine that, but that doesn't have to be the only answer we get. It's whatever the information tells us. In a sense, informational realism says, at a very fundamental level, "Follow the evidence. Follow the information where it leads, and don't constrain it," because materialism would say that that sort of information is not possible.

I think, to your point, I think you touch on near-death experiences in your essay for the volume. When you have people who are undergoing NDEs, who suddenly have access to some information about what's going on in another operating theater or whatnot, they're getting information, but there's no way to account for that in terms of any sort of chain of physical causation, so, but why should that be a problem? The world could be a stranger place than we suspect, but not if you're a materialist. If you're a materialist, that's verboten. You can't allow that. That's not the way the world works. We know that. Well, how do you know it? Well, because we're materialists and we know that materialism is right. Well, what about all those miracles? Well, they can't ... So, you see the constraint on a ... that a worldview brings, how it really shackles the mind.

Michael Egnor:

I was watching an interview with Christopher Koch a couple days ago. He's a neuroscientist who has written extensively on the mind-body problem, and he's mentioned, to his credit, that he's really rethinking the issue of free will because there simply isn't any materialist way of accounting for free will. However, free will does seem to be real and in a very meaningful sense. It's one example of many that I've seen where I just want to beat my head on the desk and say, "If you would just let go of materialism, all the ... so many of these problems, these mind-body problems would just vanish," that we've locked ourselves into this materialist prison, this conceptual prison, and we've created our own problems. Things make so much more sense if you step outside of that materialist framework.

William Dembski:

Yeah, and it's refreshing when people admit to that. I remember John Searle years back. I mean, that was his line. I mean, he's, on the one hand, he's materialist. It's like I don't understand. There's no way to account for this scientifically, and yet I've got free will. If I want to raise my arm, oh. There it goes. That was his point, so, but he was willing to live with the tension.

Michael Egnor:

Sure, and I think a materialist denial of free will, which, frankly, most ... virtually all materialists do deny it, is ... It's not simply scientifically wrong. There's a fair amount of scientific research that supports the reality of free will, but in addition, the materialist denial, I think, is self-refuting because if you have no free will, then it, within the materialist framework, it means that your actions are entirely determined by physics, by the chemistry and physics of the processes going on in your brain, but the chemistry and

physics of processes going on in your brain are not propositions. They don't have truth value. So, essentially what's coming out of your mind when you express an opinion like, "Free will isn't real," is just some kind of secretion. Why would anybody pay any attention to it? So, they're saying, "I'm a meat robot, so listen to me." I don't really want to listen to meat robots.

William Dembski:

You could take the view also, well, if you're right, then I'm just going to believe that I do have free will because I'm determined to believe that I have free will, and so, I'm just going to enjoy that.

Michael Egnor:

Right, right, right, right. Who's to say what's right? Right. So, it just reduces to gibberish.

William Dembski:

Even better is atheist Sam Harris, who's ... has neuroscience training, where he starts one of his lectures, "Today, I'm going to convince you that you do not have free will." It's like what does-

Michael Egnor:

I'm-

William Dembski:

Why should he care? What does this conviction mean that he's able to impart? There's so much irony there and yet-

Michael Egnor:

Right, right. Well, and the process of convincing someone by making an argument and getting them to agree with you implies the reality of free will. I mean, basically, what he's saying is, "I'm going to take you hostage and force you to believe in free will in some fashion," which is just bizarre. Yeah. It's kind of a pitiful scenario actually, but it's ... It has a lot of purchase in our culture today, unfortunately.

On the topic of information, because I'm fascinated, I'm fascinated by the concept of energy. It just, as a matter of physics, I think it's a very ... It's an intriguing concept. There was an article by David Oderberg in the Australian or Australasian Journal of Philosophy back in 2023: Is Prime Matter Energy? Oderberg kind of went into this idea that the Aristotelian concept of prime matter that is a pure potency or pure contingency, is that energy? He kind of gives a partially affirmative and partially negative answer to that, but it seems to me that information could be understood as kind of Aristotelian act and energy as Aristotelian potency. And so, I find that I think that information may be as fundamental a concept in the natural world as energy is, and they may be analogous to the hylomorphic ideas about potency and act.

William Dembski:

Yeah. I'm certainly sympathetic to that. There's a book that I did almost 10 years ago now. I guess it was 10 years ago that I was writing it, called Being as Communion: A Metaphysics of Information. That came out in the Science and Religion series with Ashgate, but I take this idea of information and informational realism, which was in that article that I wrote for our anthology, and developed it further there. And so, I have a chapter on energy, but, I mean, with the way I describe energy there is what's ... I'm actually turned to right now, what causes information to undergo such dynamic transformations? Information

does change. It's imparted. It causes things to happen, and so, I say the usual word to answer this question is energy.

So, it does seem that information, as it is acting, as it is taking things from potency to actuality, there's energy. I'm not sure you can just separate it from ... that there's this sharp dichotomy between energy and information. We gave the example of striking a golf ball and trying to send it into a hole. There's energy that's imparted, but there's information that's imparted. It's being sent here and not there. There's even teleology. The aim is to send it into that hole. I think they're intimately related notions. It's energy that imparts information. Information requires energy.

We talk about constraint of contingency or narrowing of possibilities. That narrowing, that's a verb, and what allows that narrowing to take place? And so, I think it's reasonable to describe that in energy and energetic terms, that I think that it's going to be consistent with much of physics, but it's going to go beyond that because I think lots of information, just even if you think of information in our minds, as we think new thoughts, as we create things, that's ... I think that's not something you can necessarily describe in physical terms. I mean, the physicalists, the mental ... The reductionists who want to reduce mind to matter, they're going to say that there has to be such a reduction, but I would say there's no evidence that, when we think some great thought, that there's necessarily any more energy or less energy in the sense of physics being imparted, and yet there may be quite a bit more information in the one than in the other.

Michael Egnor:

You mentioned at the end of The Design Inference about conservation of information and mentioned that you hopefully would publish more on that.

William Dembski:

Right.

Michael Egnor:

Do you believe that information is conserved? How is that? How does that work?

William Dembski:

Right. The information that's being described by conservation of information, it's a bit narrower notion of information. It comes up in search. It is still this notion of constraining contingency or narrowing possibilities, so you ... With search, you always have a target, and there's a search space. The interesting searches tend to be needle in the haystack searches where you've got a very small target and you're trying to find it. And so, there's information that's required that targets ... Often there's an inherent teleology there.

And so, how do you get to that target? You can do a calculation. For instance, you can have some sort of measure of size of the target versus size of the space, and the smaller the target, the more information that's going to be imparted. Often you cash this out in probabilistic terms or do a logarithmic transformation, and so, then you put it in terms of bits.

But the point is though, so when we're talking about conservation of information, I think it ... I better just give a brief example of what's at stake, and then it'll become clear what actually conservation of information means. So, let's say your target is an Easter egg, and you got this vast field. It is so big that there's no way an exhaustive search or a random search will find that Easter egg with any sort of reasonable probability, so highly improbable, but then you're on the field, and somebody shouts out to

you as you're wandering around, "Warmer. Colder. Warmer. Warmer. Hotter. Hotter. You're burning up." As they say, "You're burning up," you look down, dig a little bit, and there's that egg. Okay?

So, what happened? What allowed you to find that egg? Well, you were getting information being shouted out to you, but the question is, okay, well, where did the person who was shouting out that information get that information in turn? How did that person know that those were the right instructions as opposed to some other instructions?

So, in a sense, what you've substituted is just a random search for a search within a set of instructions, what you might call a search for the search. Originally, you were just on the field, left to your own devices. You were doing a search trying to find that Easter egg. Now you've got those instructions that helped you to find it, but where did you get those instructions? Because every instruction that says, "Go right. Go left. Go right. Go left," could be also, "Go left. Go right." You can reverse the instructions.

And so, the instruction space is itself a search space. There are only going to be certain instructions that take you to the egg and others that won't. And so, what you've done is you've substituted for the original search another search. Now it's a search in the instruction space. It turns out when you do the mathematics of it, the search in the instruction space is always at least as difficult as the search on the original space. You don't gain anything by saying, "Oh. I'm going to find the right set of instructions and that's going to get me to the egg." If anything, typically, those search spaces are exponentially larger, so you don't ... It actually ends up being a more difficult search.

And so, conservation of information in this context means that the best you can do by going in this case to an instruction space is to have the problem not be any worse than your original problem. It may get worse. It's a conservation of information. It holds in this search and search for search context.

It's deeply relevant to Darwinism, so I can just give you an example. Over 20 years ago, I was on the campus of Stanford. I was being interviewed by Peter Robinson on his program, Uncommon Knowledge, and Eugenie Scott was there. That old trope about monkeys typing Shakespeare randomly came up, and Eugenie Scott said, "Well, within Darwinism, you shouldn't think of it as the monkeys randomly typing. What you need to think of it as, the monkeys are typing, but there's a lab tech behind the monkeys with a vast vat of Wite-Out. As soon as the monkey types a wrong character, he whites it out, and then the monkey keeps going. That's how you can get Shakespeare." Well, notice how the problem has been shifted. Okay? So, it's monkeys randomly typing. Now it's you have this error correcting lab tech who is ... on whom the burden of getting Shakespeare out, but how did the lab tech know what to Wite-Out? Okay?

This is what I kept finding. I mean, it's that the Darwinist says, "Oh, we got this Darwinian search which can really do a lot better than random search," but what makes the Darwinian search work, if it works? I think in many contexts, it doesn't even work, but if it works, it's because it's been informed. It's been given information that allows it to work. What conservation of information does, really, it's an accounting principle that says, "As you track the information, you find that the information problem in fact is either staying constant, that's conservation, or it's getting worse."

Now, this is exactly the opposite of what a Darwinian evolution would say. I mean, this is one of Richard Dawkins' favorite lines is that what makes evolution such a wonderful theory is how you get complexity from primordial simplicity. That's what he calls it. I mean, basically, Darwinism is looking for a free lunch. It's looking how do you get all this biological complexity from something that's much simpler, that didn't have all that information? Conservation of information says, "No. If you've got information out, there had to be at least as much information in, at least in these, well, evolutionary contexts."

So, that's conservation of information. I mentioned it briefly in the epilogue of second edition of The Design Inference. We were actually going to include that in the second edition, but it was getting too unwieldy, and it deserves a full treatment of its own. So, that's in a sequel book that's in the works.

Michael Egnor:

It's fascinating, and certainly natural selection strikes me as an information rich process. There's a great deal of information imparted during the process of natural selection that the Darwinists simply can't account for. There's an analogy, of course, between conservation of information and conservation of energy. Is there anything analogous in information theory to the second law of thermodynamics that is entropy?

William Dembski:

Yeah.

Michael Egnor:

I think that's a very interesting question.

William Dembski:

Yeah. I mean, certainly. I mean, the language of conservation is the same with the first law, although with the first law, it's ... There's this exact identity that's being held, whereas conservation of information, it's either equality or the information problem gets where there's more information as required as you backtrack causally.

But I would say that in terms of the second law, conservation of information, I mean, if ... I wrote a book 20 years ago called No Free Lunch: Why Specified Complexity Cannot Be Purchased without Intelligence. At that time, there were a number of ideas and number of ways of referring to things, and people were even talking about the fourth law of thermodynamics, but it was a ... That, at the time, was an inverse law to the second law.

And so, I would say, I mean, one of the key thought experiments involving the second law is this Maxwell demon, where you ... or a demon is opening and closing a shutter and allowing fast or slow-moving air molecules to move between chambers and then create a difference in pressure. Moving the shutter takes virtually no energy.

It's interesting when Szilard, Leo Szilard, introduced or wrote about that. He talked in terms of, "This is an intelligent intervention." So, there's a sense in which information in this conservation of information sense can reverse the sort of entropy because the natural state of these gas molecules will be to be diffused and to not to have that sort of differential. When you've got something cold in contact with something hot, the thing that's hot gets colder, and the thing that's cold gets hotter, but it could be that the hot gets hotter and the cold gets colder if you can judiciously move the hot and the cold molecules, and ... but that, it seems, requires information, a particular type of information then to reverse it. I would say a conservation of information is not an exact opposite or counterpart to the second law, but it's ... The notions, there is some coherence there.

Michael Egnor:

Sure. I almost get a sense, and this may just be just fantasizing, but that when you look back at the history of thermodynamics, which I think is a fascinating thing to look at in the 19th century, as it became clear that there was this thing called energy and that it was a fundamental principle of the way

the world worked, you almost get the sense that we're now in an analogous position with understanding information in nature. It's a fascinating science, very interesting stuff.

William Dembski:

That would be nice if-

Michael Egnor:

Oh.

William Dembski:

... we are at some sort of tipping point with information because I think it's much more conducive to a non-materialist, even theistic worldview than certainly materialism. I mean, it's no accident that somebody like Karl Marx wrote his dissertation. He's pushed to his dialectical materialism, and his dissertation was on Democritus and Epicurus, so, I mean, two great materialist philosophers of the ancient world. There's a resonance, I think, with materialism and atheism. On the other hand, an informational realism, something that takes information as fundamental, it seems, is going to be much more open to a spiritual, Platonic, theistic worldview.

Michael Egnor:

Yeah, but metaphysics has very profound, real-world consequences, as you point out with Marx and with Marx's materialism, and I certainly think we could do better with idealism. I think things haven't worked out so well with the materialist way of looking at things.

In this podcast, I wanted to talk to Bill actually about an essay that he wrote, that is on his website, that I think is absolutely fascinating. The title of the essay is Artificial General Intelligence as an Idol for Destruction. Bill, wanted to find out. What's the essay about, and could you tell our listeners about artificial general intelligence and idols?

William Dembski:

Yeah. Let me just give a little bit of context. I've been following the field of artificial intelligence for over 40 years. I remember as a grad student even sitting in on an artificial intelligence course, and I think in the last year and a half or so with these large language models, ChatGPT and others, this has been the biggest development in artificial intelligence that I've seen in my lifetime. So, I think there's a lot of exciting stuff that's happening, but I think the ... There's also now, there's this sense that artificial intelligence is poised to take over the world and match and then ultimately exceed us in our own human intelligence.

And so, there've been people pushing this line for years now. I was moderating a session with Ray Kurzweil, who's perhaps one of the main proponents of this view. He wrote a book in 1998 or 1999 titled The Age of Spiritual Machines. He followed it up with The Singularity Is Near. He's got this year's ... a book, The Singularity Is Nearer, has not arrived, but the singularity is going to be when humans finally meet their match with machines.

So, AGI is this ... I think it used to be called strong AI, but I think AGI, artificial general intelligence, is now the term of use to describe this capability of machines where they're going to match and exceed us. This has not been achieved. What I argue in this paper is that it is, in fact, unachievable and that this hope or delusion in thinking that AGI is around the corner is something that's very destructive and is actually proving to be an idol because, in a sense, we're seeding our humanity and ultimately even divinity to

this, to a mechanical device. I think we're better than that, and so, I look at the implications of all of this in the article.

Michael Egnor:

Yeah. Yeah. It's fascinating. I kind of feel that the idea that the singularity is near and now it's nearer is kind of like Zeno's paradox, that it just keeps getting closer and closer, but never actually comes and ... but it certainly does sell books.

William Dembski:

Yep.

Michael Egnor:

You mentioned a concept from Noam Chomsky that I find absolutely fascinating and just a beautiful way of looking at that, that Chomsky used in his destruction of behaviorism back in the 1950s, when he talked about the poverty of the stimulus, the idea that there simply wasn't enough information, you might say, available to a child who's learning a language to allow or to account for all that the child can do with that language, that there's something inherent to it that's not in the stimulus.

William Dembski:

Yeah.

Michael Egnor:

It's a wonderful analogy to AI that is that there are things that human beings do that it doesn't seem that a computer, no matter how much stimulus the computer was given, could ever figure out. So, could you elaborate on that?

William Dembski:

Yeah. What I actually focus on is cases where the computers are doing quite well, but it's that they're getting massive amounts of information beyond anything that we as humans do. So, for instance, humans are able to drive just fine. Fully automated, level five driving has not been achieved. Tesla is a big player in that field, but Tesla, in order to try to get to fully self-automated driving, is feeding its computers 160 billion frames of information. This is Tesla automobiles driving the roads of the world, and so, those images are being sent back. So, you've got over a trillion frames of images that are being processed every week.

The fact is, humans, we learn to drive without anywhere near that much information. This is a world of big data, big tech, and that's what's making AI work. We see that also with large language models where you've got with ChatGPT-4, over a trillion nodes, hundreds of billions, minimally, hundreds of billions of words that they've processed from the internet, but humans learn this, learn language with much, much less.

So, I think what should give us pause about human intelligence is that we do so much more with so much less. That also suggests that how we do it, what our intelligence is is a fundamentally different scale of being than what we're dealing with with artificial intelligence as we know it now. This is artificial intelligence at its best and this is not even AGI. Artificial general intelligence would have to somehow coordinate all these functionalities, all these abilities into a single intelligent being. We can drive. We can talk. We can do lots of things, but if we're driving, we can also fly a helicopter, but all the data, those

trillions of frames from driving scenes that Tesla is analyzing, that will do nothing to help pilots to do automatic piloting of helicopters or name any number of other things.

So, there's a universality to our intelligence that is absent from artificial intelligence as we know it. So, it ends up being, in my view, a pipe dream, just a massive amount of overselling and hype to say that AGI is around the corner. I would say the evidence is not there at all. This notion of poverty of the stimulus, it seems, gets at least at one aspect of how our intelligence is fundamentally different from what we're seeing in with artificial intelligence.

Michael Egnor:

I think that there's an aspect of truth to all of the commotion recently about artificial intelligence, but I think there's a big aspect of falsehood as well. The truth is that it's a profoundly powerful thing that will change our culture in ways that we can't even imagine right now, in much the same way that the printing press changed Europe in the 13th and 14th century or the 14th and 15th century, in ways that they couldn't imagine at the time. This is the printing press magnified a million times.

But I kind of think in terms of Pogo's famous cartoon that said that we've met the enemy and he is us. We've met AI, and AI is us, that everything in AI is human, and AI is simply a tool that we use to express ourselves. The expression can be profound and can be labyrinthine. It can be intricate. There can be aspects of it that we didn't predict, but it's still all us. There's no mind in there. The only mind is our mind. So, I think AI will profoundly change the way we live, I suspect much for the worse in many ways, but the key is to understand ourselves and what we're doing with AI. Unfortunately, I don't see that happening. I don't see a lot of introspection about how AI is going to magnify human evil, but I think it is going to.

William Dembski:

Yeah. I mean, I think, as with any technology, there are going to be temptations and for abuse, but I think there are also opportunities for good use. I think-

Michael Egnor:

Sure.

William Dembski:

... one of my favorite professors at seminary was somebody named Diogenes Allen. He wrote a beautiful book called Spiritual Theology, and in it he describes Hugh of Saint Victor in the 12th century, I believe it was, where he looks at technology and says that technology is a blessing from God to help overcome the effects of the fall. We don't eliminate the effects of the fall. That's going to require new heavens and a new earth, but it's ... Technology can have that role.

I look at, for instance, chess. Computers now play much stronger chess than humans. In fact, in your computer program on your iPhone, that's going to be stronger than the strongest world champion, and yet that hasn't stopped chess from thriving. I mean, when I was following Bobby Fischer's striving for the World Championship in 1972, there were about 80 grandmasters. Now there are, I think, about 17, 1,800 grandmasters. Computers have made the human chess players better because they've just raised the bar.

So, I think there is that aspect to it. I use ChatGPT to look things up. I have to be careful because it can hallucinate. I know that's now becoming a common term where it just makes stuff up, but it's useful for what if I need to find some things quickly. Often, that's a good way to go.

So, I have a friend who's a professor of physics, and he's finding that just about all the physics problems he's giving his undergraduates, ChatGPT can solve. Now, I think that's not a bad thing as long as we keep ... make the students also be able to stand on their own feet and do the problems without the props, but to have, as it were, a tutor that knows exactly what's going on, and you can prompt these large language model in different ways. Give me a hint. Okay. Give me the full solution. There are all sorts of things you can do, but I think there is going to be a big temptation, which is to cede our humanity to these machines and to just bend in on ourselves, look to these machines, and miss human connections and miss who we are.

I mean, I was actually at a conference where Ray Kurzweil spoke and I spoke. This was in Seattle or just outside of Seattle, a tech conference in October, November. The sense you get from him is that technology has made us all so much smarter, and that, in a sense, the implication was that these people who didn't have technology in the past were, yeah, were intellectually substandard. I think to myself how much peoples in the past were able to accomplish, how much they were able to memorize. There's a wonderful book. I think it's Robert Green on Mastery, and he'll look at, for instance, how South Sea Islanders were able to master the oceans on these little ships and populating islands like Tahiti and Hawaii. How did they do that? I mean, these are vast oceans, and they didn't have GPS. They didn't have our technology. So, I think there's something to be said about the ingenuity of humans who do, again, more with less.

Michael Egnor:

One of my fondest memories of my kids growing up was I was in Hawaii on a family vacation. I took my oldest daughter, she was about 10, to a little class that was given by a native from the island who was an expert on celestial navigation. His passion was how did the ancient, as you mentioned, the ancient Pacific Islanders navigate in the open ocean. So, as the sun went down and the stars began to come out, he, just looking up at the sky, he could name every star in the sky, everything you could see, and he could tell you when it rose and when it set and what time of the year it rose and set. He could read the sky like you read a book.

William Dembski:

Yeah.

Michael Egnor:

It was absolutely amazing. Yeah, yeah. AI will give us a great deal more information and allow us to leverage things that we do. I don't know that it might make us smarter in a limited sense. I don't think it will impart much wisdom. I think it will probably make us a lot more foolish in many ways.

William Dembski:

Could be, especially insofar as becomes an idol. I mean, this is where I'm going with AGI and it ... Even though AGI does not exist, and I, in my view, I make an argument which I think is quite compelling, that it's, in the end, unattainable, but that doesn't matter for something to be an idol. It's what we ascribe, the powers we ascribe to it, not the actual powers that it has. I think that that's going to be very deceptive for people. I think it will take various forms.

I mean, one of the things I deal with in the essay is just are we going to, somehow, to try to highlight our humanity, enhance it, or are we going to make our humanity subservient to the artificial intelligence? So, I have a section where I'm looking at putting things on railroads, as it were. So, if you have the

artificial intelligence, these automated driving programs that are still not all that great, but what ... How could we make them work?

I mean, one way that Elon Musk made it work in one instance was by painting lane lines because we're in a place where his cars were not able to succeed. So, we can change the environment to make AI work, but the whole point of AI is to put it in environments where we are operative, but what happens when we start adapting our environments to artificial intelligence? Then we have to be in those environments, those artificially made environments that were ... which we were not meant even to operate in. I think that becomes a real temptation and challenge.

Michael Egnor:

Sure.

William Dembski:

And so, I think there is this kind of infatuation with technology that somehow it's going to do all this stuff. The danger is that we will lose our humanity, and I see this so much, I mean, with people just hunched over their iPhones, the sort of addictiveness of it all and just sacrificing so much of our time.

The thing is, the big tech companies, that's what they want. They want to suck us into their technology, so we spend the time with them and spend the money there. And so, to get that sort of independence, I think it does require, in a sense, a mentality that says, "We need to fast from these things. We need to get some distance." I mean, it's almost the Desert Fathers. We need to go get away from these things at times.

It's interesting to me. I close the essay even with some of the ... one of the main schools where people in Silicon Valley send their kids. It's a Waldorf school which minimizes technology because they see that the most important parts of education are engaging with fellow students, engaging with teachers, engaging with real things rather than virtual things.

And so, I think maybe part of this is there's just going to have to be a certain amount of bloodletting where we embrace these technologies. They really hurt us, and then we wise up and say, "Okay." C.S. Lewis said, "Pain is God's metaphor."

Michael Egnor:

Right.

William Dembski:

I think we're already seeing some of this with social media, people, I mean, that seem much more depressed when they're spending inordinate amounts of time on it. The social media, it's not that they try to edify us. It's that they give us titillating images, say things, do things that upset us because that tends to keep us glued to these social media.

Michael Egnor:

Yeah. I think the person who I think described dynamics of this nature most profoundly, at least in modern times that I'm aware of, was René Girard.

William Dembski:

Okay.

Michael Egnor:

He was a French literary scholar and philosopher, passed away recently, but he wrote about what he described as mimetic contagion, as the idea that groups of people will catch on to the same idea and try to imitate each other. It leads to enormous violence and enormous strife, and it can destroy a society. The typical way that societies survive through the process of mimetic contagion is either by sacrificing a scapegoat. That is they all, rather than kill each other, decide to kill someone or something else in place of each other, which relieves some of the tensions and some of the conflict, or they adopt Christianity actually. He described Judaism and Christianity as anti-mimetic in the sense that the notion that scapegoats are innocent and that what we need to do is to show mercy and kindness and not competition and violence.

One of my concerns with AI is that I see it as kind of like kerosene for this mimetic contagion, that if you light the match, AI can help this stuff spread like crazy where everybody's thinking the same thing. Everybody gets the same ideas. People imitate each other, and it can be ugly stuff. So, you mentioned that there might be some bloodletting, and I think there will be bloodletting. The question is will there be anybody alive after the bloodletting? I'm not sure.

William Dembski:

Well, I don't think it's going to be though a Terminator or Matrix or a HAL 9000, where these machines are going to achieve consciousness or become our overlords. If there are overlords there, it will be people pulling strings. It will be like a Wizard of Oz behind the curtain.

Michael Egnor:

Oh, yes. Yes.

William Dembski:

It'll be a human being, but yeah. You do wonder, I mean, to what degree ... Seems to be a very Malthusian element in much of the sort of secular, elitist thinking that's out there which is, "Too many people. We need to winnow it down." It's not clear to me how AGI would accomplish that, or AI, I should say. I could see a good pandemic, for instance, eliminating a lot more people. I mean, and I say this not even so much thinking about COVID, but I just remember there was a guy named ... What was his name? Pianka, I don't recall the first name, at the University of Texas, Austin, where he was wishing something like Ebola on the human race so that we can get rid of 80, 90% of the people. He said this to a crowd of about 500 and he got a standing ovation. That's this sort of-

Michael Egnor:

As opposed to being ridden out of town on a railway. All right. Right.

William Dembski:

That's right.

Michael Egnor:

Right.

William Dembski:

Yeah. Well, this is this mentality. Who is it? Paul, what is it, Erman?

Michael Egnor:

Ehrlich.

William Dembski:

Ehrlich, that's it. Sorry, but, I mean, he's been touting this Malthusian line since, what, '60s, '70s? He's been proven wrong. I mean, Julian Simon proved him wrong, and he's something like Ray Kurzweil. It's near. It's nearer. Yeah.

Michael Egnor:

What gets me with Ehrlich is when you look at his CV, I mean, the guy has gotten every honor you could possibly imagine. I believe he's a member of the National Academy of Sciences. He's an extremely esteemed scientist who's been dead wrong on everything he said. I mean, you couldn't imagine somebody being as wrong as he has been wrong publicly, and he's sitting on top of the world. It's a crazy world. It's a crazy world.

William Dembski:

It is.

Michael Egnor:

Yeah, but the AI is, I think, in many ways, the most profound thing that has ever happened to humanity outside of the religious, spiritual world. It's like the printing press magnified a million times, and the printing press led to the Thirty Years' War and much of enormous violence in Europe. I think AI is going to lead to stuff that's much worse than that, but that's just me.

William Dembski:

Interesting. Yeah.

Michael Egnor:

So-

William Dembski:

I'm not as pessimistic as you are, but I think it certainly bears watching. I think those who think that AGI machines are going to get ... become conscious and then exceed us in all our mental capabilities, I don't see it happening, but it is interesting to me though that I think ... One thing that could happen is that AI actually gets used to convince people that AGI exists.

Michael Egnor:

Yes, yes.

William Dembski:

I've seen, for instance, on YouTube, there's what looks like a robot playing ping pong and just tremendous ping pong player, but it's not. I think it was this one video short that I looked at at a 100 million views, but it's not an actual robot. It's just a CGI robot. It's just put on there.

Michael Egnor:

Right.

William Dembski:

So, it's possible to make AI look a lot more powerful than it is by using AI.

Michael Egnor:

Sure.

William Dembski:

I think these deep fakes, that's something that we're going to have to deal with.

Michael Egnor:

Well, I think your point about AGI being an idol is a very salient, very powerful point. It's an idol that is enormously dangerous because it has the capacity to really simulate a kind of a god, kind of like it knows everything, and it's a very easy idol to worship. It becomes addictive, actually. Scary stuff.

William Dembski:

Yeah. We live in interesting times. What's the Chinese proverb say? That's a-

Michael Egnor:

It's the worst curse there is to learn, live in interesting times. So, I thank you, Bill. It's been fascinating conversation and-

William Dembski:

Likewise, enjoyed this.

Michael Egnor:

Great. Thank you so much. So, thank you to all of our listeners. This is Mike Egnor from Mind Matters News. I've had the pleasure of speaking with Bill Dembski, and thanks so much for listening.

Announcer:

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