Mysteries of the Mind

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Announcer:

Greetings. This week, we have a real meeting of the minds as a neuroscientist and neurosurgeon sit down for a chat about all things brain related on Mind Matters News. Now here's your guest, Dr. Andrew Newberg and guest host, Dr. Michael Egnor. Enjoy.

Michael Egnor:

Today on Mind Matters News, this is Michael Egnor. I have the great privilege of interviewing Dr. Andrew Newberg, who is a pioneer in the field of neurotheology. That is a field in which he studies the theological correlates of activity in the brain. And so it's my privilege, and I'm very excited to interview Dr. Newberg today.

Andrew Newberg:

Thank you. Thanks for having me on your program.

Michael Egnor:

Thank you, Andy. I just want to give our audience just a little summary of who you are. You are a professor in the department of integrative medicine and nutritional sciences and the director of research at the Marcus Institute of Integrative Health at Thomas Jefferson University Hospital in Philadelphia. And also you have been an adjunct professor of religious studies and a lecturer on the biological basis of behavior program at the University of Pennsylvania. You are a prolific researcher, a physician, and you have published 10 books and are really considered a pioneer in one of the world's experts on neurotheology. And just going forward, one of the book titles fascinates me, and I'd like to talk to you more about that. The book title is Why We Believe What We Believe, which I think is of great interest to our audience and is of great interest to me. So, Andy, could you describe your research to us please?

Andrew Newberg:

Sure. Well, as you mentioned, a lot of the work that I have been doing has been in this field that has been ultimately called neurotheology. And to me, the simplest definition of that term is more or less, as you said, that it's really the study of the relationship between our religious and spiritual selves and the human brain. There's a couple of important points that I like to mention about just what this field is all about. First of all, for me, it is what I like to refer to as a two-way street. It is not just science looking at religion, it is not religion looking at science, but it is both of them really looking at each other to help us understand who we are as human beings, recognizing that there's a biological part of ourselves, the brain and our body, and so forth. There's a spiritual part of ourselves, which can be more specifically religious, but can also incorporate other spiritual activities.

Andrew Newberg:

And of course, there's also a psychological and a social part, which are ultimately all wrapped up in these different dimensions of who we are. The other thing I always like to say about neurotheology is that if it's going to work for at least for me as a term, I like to define both sides of that very broadly, so that the neuro side is not just neuroscience or neuroimaging, but it can include psychology, it can include anthropology, it can include medical aspects of how different diseases and so forth are associated. You know, what happens when we develop different diseases and whether they may be associated with different religious and spiritual experiences or how people turn to religion and spirituality in times of health crises and so forth. So the neuro side to me needs to be defined very broadly.

Andrew Newberg:

And of course, theology itself is a very specific discipline where we're talking about taking the primary tenets that say the sacred texts of a given tradition and trying to understand what they mean and how they relate to us as human beings. And we certainly can look at that from a brain related perspective. How does the brain think about these things? You mentioned the book, Why We Believe What We Believe, which has always I felt been a very important book that we put together and looks at beliefs, different experiences, attitudes, behaviors, and so forth. So again, for me, the theology side has to include all of these different aspects, including various practices like meditation and prayer, other types of spiritual practices and experiences, and also really trying to look at this from a very global perspective.

Andrew Newberg:

So we're looking at many different traditions, and we can certainly talk about this on a little bit more detail later, but we've done brain scan studies, for example, of lots of different practices from almost every different tradition. And that to me is very exciting to be able to see the relationships and interrelationships and so forth that are very important for us in terms of understanding the overall impact of religious and spiritual beliefs and phenomena in our lives as human beings and how that has an effect on us. So a lot of the work that I have done, as I mentioned, has really been looking at the using imaging studies, but there're other aspects that are really very important and I'm sure we'll get into them, but there's looking at different medical conditions.

Andrew Newberg:

As I mentioned, we've done some phenomenological studies looking at how people describe different kinds of experiences. So, to me, it's an extraordinarily rich field of work, a very multidisciplinary field that gives us, I think, a very exciting opportunity to find ways of bringing religion and science together, which I think is important. And again, I think to me, the ultimate ideal is helping us to understand who we are as human beings.

Michael Egnor:

In terms of brain scanning, what methods do you use to study the brain?

Andrew Newberg:

Well, we've been very fortunate to be able to use a whole array of different techniques. As one of my old mentors used to say, if you're going to be a good carpenter, it's good to have a lot of different tools in your basket. And I think to a certain extent, we've been very fortunate to be able to have a lot of different imaging tools to be able to use. My background in the medical world is actually in nuclear medicine, and so that does involve injecting different types of radioactive tracers to look at different

physiological processes in the brain or in the body. And we have done that with two main types of imaging, one called spect which is single photon emission computed tomography, and PET positron emission tomography, pretty similar in terms of how they work, that we inject this radioactive tracer. Maybe it follows blood flow or metabolism, or some aspect of the brain's function.

Andrew Newberg:

And we inject that sometimes while people are engaged in a particular practice like meditation or prayer sometimes before and after. We did an interesting study of people going through a spiritual retreat program. And then we take a picture of the brain. We see where this material went and it tells us something about the activity levels of the brain during different kinds of states. So we might look at somebody while they're in prayer and compare that to a meditation state or compare that to a resting state or something like that. And the other main imaging tool that I've been fortunate to use is functional magnetic resonance imaging, or FMRI, which basically uses a big magnet to be able to look at again, different physiological processes like blood flow or neuronal activity. And there too, we have looked at different practices while people are meditating or just the effect of doing those meditation practices in terms of things like anxiety or depression and so forth.

Andrew Newberg:

And sometimes that has more of a therapeutic bent to it. But one of the interesting advantages or disadvantages of these techniques. With the MRI, you really have to be in the scanner while you're doing the practice. And sometimes that's very doable. People can do a prayer practice or certain meditation practices lying very still in the scanner itself, but other practices are much more difficult to do that. For example, we did a really fascinating study of people speaking in tongues, where they're making these different vocalizations and they're moving around and so forth. So by injecting them with this little radioactive tracer, while they're doing that practice, we can then scan them a period of time after they're done when they can lie still, but it kind of captures a snapshot. It captures what their brain was doing at the moment that they were doing the practice.

Andrew Newberg:

And again, then we can say, okay, well, this is what we see going on in the brain when they're speaking in tongues, when they are saying a prayer or whatever. And so those have been the main tools and other people have used things like electroencephalography EEG to look at electrical changes in the brain. So people are using a whole bunch of different arrays and really it's been a growing field of work to look at these practices from a variety of different vantage points using the technologies that we currently have.

Michael Egnor:

Of course, there's an enormous literature and body of knowledge on people's experience in various religious disciplines. How does this add to our understanding of spirituality? How does the use of functional MRI imaging, spect imaging, and EEG, what does that contribute to our knowledge of religion beyond what we know from the great texts from theologians, all those things?

Andrew Newberg:

Sure. Well, and I think that is an incredibly important point, which is that to me, it provides a contribution. It provides an added perspective that perhaps we just haven't had the ability to look at before, but in no way, shape, or form, does it eliminate or get rid of what those great theologians and

what people through the millennia have had in terms of your experiences and the beliefs that they hold. So on one hand, if somebody is a deeply religious individual, that's what's important. And so in that context, being able to say that their parietal lobe did something or their frontal lobe did something, it doesn't really change what's going on in terms of their own beliefs. It's like saying if we do a brain scan of somebody who we're trying to study love, for example, I mean, it doesn't mean that if we understand what areas of the brain are involved, that people should stop falling in love.

Andrew Newberg:

It just gives us this new insight into a little bit about how it works and how these beliefs and these experiences have an effect on us. And in that context, I think there is some real value because it does provide some knowledge about how being a religious or spiritual individual or doing a spiritual practice may actually have an impact not only on the spiritual part of who they are, but on the biological part and the psychological part as well. And so sometimes it's helpful for us to understand a little bit more about how these different practices affect us. Are they affecting different areas of our brain? You know, one of the things that I think is fascinating is that even when you talk about prayer, for example, well, there's so many different types of prayer and there's prayer that evokes powerful emotions, there's prayer that is deeply cognitive, there's prayer that is contemplative.

Andrew Newberg:

And a valid question is how are they related to each other? How similar, how different are they? And again, there's certainly the theological explanation about what are their similarities and differences, but does that correlate with something that's different in our brain? Does it tell us something about how our brain intersects with those different practices and does that in some regard, teach us a little bit... If we think that a particular prayer practice evokes powerful emotions, are we seeing areas of the limbic system, the emotional centers of our brain turning on, does it correlate with the findings and the descriptions that people have of those practices? I think the other thing too, I mean, there's always a more practical aspect as well, which is certainly important for a lot of people, which is when people engage in various spiritual practices for spiritual purposes, for religious purposes, sometimes it helps them feel better.

Andrew Newberg:

It helps them to cope. It helps to reduce their anxiety or their depression. And from a biomedical perspective, sometimes it's helpful to see, well, is that having an impact in the same way that psychotherapy may have an impact or even a medication may have an impact? Is it settling down our amygdala, our limbic system so that people are less anxious? Is it turning on certain areas of our brain to help us feel less depressed or bringing more dopamine into the brain to make us feel have a heightened mood? So I think that there's that ability as well. And again, this does not lead us down a path of saying, well, if you have depression, we have a brain scan that shows that this prayer practice can help alleviate depression.

Andrew Newberg:

You should do this prayer. But what I think it does help us understand is that when people do have depression, if they happen to find that particular prayer practice of value to them, maybe we understand a little bit more about how it's working, how is it helping them? And I think that helps us to understand a little bit more the overall relationship between our spirituality and our psychological cells. And maybe the last way of answering your question, which to me is also quite fascinating is the whole

discussion of human consciousness. How do we actually think about ourselves, how to become aware of ourselves or aware of the world around us? And of course, in some of these very profound, spiritual states, mystical experiences, and so forth, people are able to really alter their levels of consciousness.

Andrew Newberg:

And trying to understand that I think may provide us an opportunity to be able to say something about the nature of human consciousness as well. So I think in many ways, the answer to your question is that it cuts across some very what might be called esoteric ideas just about what prayer is and what these spiritual beliefs and experiences are and teaches something about how they operate within us to things about how the brain works, how the mind works, how consciousness works to the more pragmatic even therapeutic concepts about, well, if you do a prayer practice, is this changing your brain in a way that may help you with depression or may protect you against Alzheimer's disease or something like that? And so I think there's a lot of very interesting and very exciting ways of taking it depending on what a particular person is interested in exploring.

Michael Egnor:

Certainly, from what I know of your work, I'm very impressed. I think it's a fascinating topic. And I think you're doing wonderful work. There is a critique of neuroscience, particularly cognitive neuroscience that has been given by Roger Scruton, who's a philosopher. I think he passed away recently, and he described neuroscience in an extraordinarily succinct, but I think accurate way when he said that neuroscience is a vast collection of answers with no memory of the questions. And what I like and what I've read of your work and what you're describing is that you were pretty serious about the questions because one can get so lost in the methodology and data produced by neuroscience, that you really forget the questions that we're trying to answer. Do you either have or have you acquired any particular metaphysical perspective on the relationship between the mind and the brain? Is your work showing you a materialist perspective, an idealist perspective, a dualist perspective, has that entered into your work?

Andrew Newberg:

Well, thank you. I mean, those are all wonderful points and extraordinarily challenging questions to answer.

Michael Egnor:

Yes. Have you solved mind, body problem?

Andrew Newberg:

I figured it out last week. Well, going back to your point about the critique, first of all, I mean, I think it's really right on the mark. I mean so much, in fact, part of why to me neurotheology has a value is that it's not just about the science, but it is about the philosophical issues and the theological questions that we ultimately are really trying to answer. I mean, in my mind, a lot of times people ask me how I got interested in this. And in many ways it was really a philosophical pursuit to understand the nature of reality and how we as human beings understand that reality. And so much of what I think we need to learn in this context is what are the questions and how do people process the answer to the questions?

Andrew Newberg:

How do we go through our own thought processes? How do we engage them in different kinds of ways? And in fact, one of the things that we've started to get more into actually has been to actually ask people those questions. And that to me is also actually fundamentally important that it's not just the great theologians who have cornered the market on answering these questions, but what does everybody think? You know, what do other people think about God's existence and how do they come to those ideas and what does God mean? And how do they understand what God is, for example? So I think that part of what we want to do is explore the nature of those questions and then see where, when we can bring some scientific information into the discussion, does it help us, does it give us a new insight?

Andrew Newberg:

Does it not really help at all? And I would say to answer your bigger question, when it comes to those metaphysical questions, I think that from my own personal perspective, one, I think we have to be extremely careful about how we interpret results of any scientific study. And so I think it's always important to be open, open to the materialist perspective, open to the supernatural perspective and open to ways of perhaps trying to find an integrated approach that finds ways of linking them together, whatever that means. And so in my own heart of hearts, a lot of what I do is actually very contemplative. I spend a lot of time thinking about those questions and how the different pieces of information that I have been able to look at it in terms of brain scans and so forth, what does that actually mean and how do we understand it?

Andrew Newberg:

And I guess, and I'm not sure if this is another answer to your question, but if my fundamental question is how do we know what's real and if what we perceive to be real is accurate? Part of what I've always thought about is that in some sense, you have to get outside of your brain, whatever that means, look at the world, and then see if the way the world is out there is consistent with what you're thinking on the inside. Now from a cognitive neuroscience perspective, there's no way to do that, but from a philosophical or theological perspective, a spiritual perspective, we have these experiences certainly the more intense spiritual experiences or mystical experiences where people describe that kind of a state where they say that they have gotten beyond their brain, that they have gotten beyond their consciousness.

Andrew Newberg:

They've become one with God, they've become one with the universe. And I can't say that those are absolutely true either, but boy, there are incredibly fascinating experiences that I think really require a lot of effort to explore and understand and understand them both from the perspective of the experiences themselves, as well as from the perspective of, well, how does that still connect to whatever's going on in a physical world and in their brain? So I certainly don't have the answers yet, although I have always said that if I ever figure it out, I will certainly let everyone know.

Michael Egnor:

As soon as possible, that's right.

Andrew Newberg:

As soon as possible. But I do think I think we have to be really careful. And if you'll indulge me for a second, one of my favorite little stories is about the study that we did of a group of Franciscan nuns. And

it was a very small study. And I had the nun had come in. One of the nuns had come in and we did her brain scans, and I showed her what was going on in her brain when she was doing a prayer called a centering prayer, versus when she was just at rest. And after I showed her all the changes that went on in her brain, she thanked me so much. She thought it was so wonderful to be able to see, she said thank you, Dr. Newberg, for showing me how the prayer practice really validates my ability to connect with God and then how it has an impact on me and my brain and my body.

Andrew Newberg:

And she was really just so appreciative. And I said, you're welcome. And off she went and I felt very good that I had helped to make this nun unhappy. And then after we published our study, I had a call from the head of the local atheist society. And I said somewhat cheaply hello, and how are you doing? And they said I just wanted to thank you so much for doing this study and proving that God is nothing more than a manifestation of your brain's function. And that we can just reduce all religion to the brain. And I sort of said, well, you're welcome and off he went and he was happy. And somewhere in the yin yang of the universe, I thought it's kind of amazing that one study could make a nun and an atheist happy at the same time.

Andrew Newberg:

But it underlies the point, I think, which is that the beliefs and the biases, and this is we talk about this in the Why We Believe book, the beliefs that we hold going into whatever pieces of information we look at affect greatly how we interpret them. And so I always say, well, all the brain scan is showing ultimately is what's going on in her brain when she has that experience. It doesn't prove that God is or is not in the room with her. It's just showing you what's happening in her brain. But from that information, how far can we go and what can we say about these experiences and their effects? And so I still think that while we may not necessarily be able to truly answer the metaphysical questions, certainly, we're not going to do that just by doing a brain scan. Maybe by bringing all of these different elements together, we might get a little bit closer than we ever have before, but I don't know.

Michael Egnor:

I just wanted to ask, do you see differences in the brains of people who are meditating in a theistic and a non-theistic way? Is there something different about belief in God that you can see in the brain?

Andrew Newberg:

Well, that's a great question. We haven't specifically been able to make that kind of a differentiation in the sense of someone who believes in God and praying to God versus just praying or just thinking about or just meditating. But part of the problem, I think, and this is one of the things I get very excited about is as a researcher are some of the methodological challenges of doing this kind of research. And so part of the problem is that if you are meditating on God, well, you are praying to God, there's something that you're doing. You're praying, you're directing your mind towards something which may be very different from somebody who is directing their mind towards nothing. So one of the questions would be like, well, what would be the right comparison and how would we look at that?

Andrew Newberg:

You know, there was one very interesting study that looked for example, and this may be a partial way of answering your question, they looked at people doing conversational prayer, and they found that when people were engaged in conversational prayer, talking to God basically, that they activated a lot of

the same language areas as they did having just a normal conversation with another person. And I think that there is an important point there, which is that we have one brain, each of us has one brain. So as far as we know in the moment, it's not that we have a different part of our brain that turns on or becomes active when we engage our religious and spiritual selves. But if we pray to God, if we use our language, then our language centers of the brain will turn on.

Andrew Newberg:

If we feel the love of God, well, our amygdala or our limbic structures will turn on. If we feel connected to God, then the areas that help us with our spatial representation of ourself help us to feel connected, that's part of how that process goes. So in some sense I always like to say that there isn't one part of the brain that is your religious and spiritual part, it's really your entire brain, because there are so many rich and complex ways in which we engage religious beliefs and it can be cognitive, emotional, experiential, behavioral, and so forth. So in many ways, to me, it makes sense that we were given a brain that allows us to be able to have all these different kinds of experiences and that there isn't just this extra part of ourselves that turns on when we walk into a church, for example, and begin to pray.

Andrew Newberg:

But that being said, it will be interesting to see future studies to see how much we can really differentiate different kinds of practices and those that are more theistic. And of course, be really interesting also to see is there a difference between a Muslim, a Jew, and a Christian, all praying to God. Are they all doing it in a similar kind of context? How much did the beliefs that go along with their tradition affect the way they think about their relationship with God? You know, if a Muslim has the concept of surrendering to God and a Christian may have a sense of connecting with God or being forgiven by God, then in and of itself, those could be differences, but not necessarily because of the actual perception of God, it's just how they themselves or the actual being of God, of course, but it's how they're perceiving that relationship.

Andrew Newberg:

So it's a great question because we have to go through a very complex set of ways of thinking about that question and how we might best answer it. And then keep pushing our ability to keep thinking about those questions.

Michael Egnor:

There's a philosophical perspective on the mind, brain relationship that goes back into the 19th century. It was William James commented on it quite a bit. And that is the notion that it's not the case that the brain generates the mind, but rather that the brain focuses the mind. That the mind as part of the soul is a much larger thing than we ordinarily experience. And the brain is a biological organ that puts the mind to work in the natural world. But that the mind is something fundamentally different from the brain. And I've always been impressed that great mystics, most of my acquaintances with the Christian tradition speak of a dark night of the soul and the necessity to in some sense, suppress your brain activity, suppress your ordinary mental activities to allow oneself to connect to God and to connect to transcendent things. Do you see any evidence for that in the brain imaging?

Andrew Newberg:

Well, in some senses, yes. You know, again, we have to be careful about what we might conclude, but what has been fascinating to me is that in a number of the practices that we have studied, where people

do feel as if they have released themselves or let go or surrendered to God in some way. And there have been a number of our brain scans have looked at this. One of the areas in our brain that actually particularly shuts down is the frontal lobe. And our frontal lobes are typically involved in helping us to do purposeful things and to think what we're doing, think about what we're doing and do purposeful behaviors. So it's intriguing to me that this area of the brain starts to shut down when people have those very intense kinds of mystical experiences, these intense spiritual experiences where they do feel like they're not in charge anymore, they are allowing it to happen. And going along for the ride, if you will.

Michael Egnor:

That's absolutely fascinating because that's exactly what the practical everyday experience of people who in our due contemplation or various mystical prayer try to achieve is to basically shut down their own mind to connect more readily to God's.

Andrew Newberg:

Yeah, exactly. And I mean, there is some evidence for that. And of course, the other area of our brain, which we have observed quieting down is the parietal lobe, which normally helps us to take sensory information and generate our sense of self, our spatial representation of ourself. And during these practices that parietal lobe starts to quiet down. We think also in a similar context to blur that boundary between self and other to quiet down the ego self, if you will, in conjunction with the frontal lobe and thereby helping to facilitate that kind of experience. But I also want to come back to your first point, which I think is also extremely important. I've talked about this a lot in my work, what is the direction of causality?

Andrew Newberg:

And again, to me, this is a really fascinating neuro theological question, philosophical question, and biological question, which is what's generating what? And I think it is so fascinating to watch these individuals who have these intense experiences, it's fascinating to see what goes on in their brain, but again, it does prove that the brain is generating the experience. I mean, just to be really simplistic, if I see a car outside, well, my brain didn't generate the car, the sensory experience that I have of the car is generated in my brain, but that doesn't mean that's what's going on outside. And so if people are connecting to God, if people are connecting to some ultimate consciousness or something like that, who's to say whether or not this is just our brain receiving that experience as you mentioned, or is generating it?

Andrew Newberg:

And this is where again, I think there's wonderful theological questions, philosophical questions, and now we can bring in a little bit of the science and say, oh, well, isn't this interesting that the frontal lobe quiets down, does that tell us a little bit more about what's really going on? If somebody is generating language and their language areas have shut down, ooh, how is that happening exactly? And does that push us a little bit further down the path towards investigating these kinds of questions. But I think still ultimately the experiences are what's fundamental for us to understand. And that's why even in my own examination of this whole topic, to me, my own contemplative processes are very important because I think that helps me to continue to engage those questions.

Michael Egnor:

Do you see any differences between the brain activity, again, in people who are contemplating in a way that is theistic and people who are contemplating in non-theistic ways?

Andrew Newberg:

Well, the one interesting little end of one study that we did, which somewhat answers your question is I had a colleague of mine who was a fairly deep meditator, had meditated pretty much on a daily basis throughout most of his life did not consider himself to be theistic in terms of his own religious beliefs. And we said well, why don't we do this? Why don't you meditate once while you're thinking about God, and then you're meditating on God, what does God mean to you? How do you think about the concept and then doing that comparison to just your other meditation? And what was interesting was, and this has to be taken with a big grain of salt, is that when he was thinking about God, his brain didn't do very much.

Andrew Newberg:

And I think that what's important is that when you are engaged with something that you profoundly believe in, then that is more likely to cause profound effects in the brain. And when you are meditating on something that you do not believe in, then it's just not going to give you that kind of an impact, or if you don't believe in God, even though you're thinking about God, that isn't going to have nearly the kind of effect it will as someone who really truly has a belief. And so I think that in general, what we have found is that people who do have a more theistic faith certainly activate their brain in very substantial ways, very much in terms of how they interact with something, as opposed to those individuals who have more of a practice where they're not focusing on a particular thing, but just emptying the mind, so to speak.

Andrew Newberg:

And there are differences there. But again, part of the issue I think comes into play and this is challenging to us is that any time that we look at someone who has a profound belief in God, for example, then how does that just change their brain at all? And how does that affect the way in which they think about the world, look at the world, how does it prime them, so to speak, to look at the world in certain ways. And in fact, I'm reminded of one of our prior studies that I found very interesting, where we were showing people different symbols that were either religious or non-religious and the religious symbols activated the brain in a much different way than the non-religious symbols were.

Andrew Newberg:

And then when people had a belief in them, it affected them even more. But what was interesting was that it affected it in particular, in the occipital lobe and the primary visual cortex really before so to speak the symbol got up into their brain. So it was really their beliefs actually affected the way their brain perceived reality from the get-go. And I think that talking about the interesting theological implications of that, the idea of if you pray, if you are a religious person that you actually change the fundamental nature of who you are, that's what this information talked about. So it is possible to do that and to be able to change you. So again, fascinating issues and questions that we certainly have a long, long way to go before we can answer all those questions.

Michael Egnor:

Kind of getting back to Roger Scruton's quip about the vast body of knowledge or a vast body of answers with such difficulties with the questions, the questions are so fiendishly tricky.

Andrew Newberg:

Yes.

Michael Egnor:

In the totemistic understanding of the soul, the connection one would have with God would be an immaterial connection. It wouldn't be a material act of the brain. So one might even imagine that the connection with God would not be something that would show up on any brain imaging, but then again, the cause and effect is difficult. So what shows up on brain imaging may be the material response to the immaterial connection, or it could even be the suppression of for example, activity in the exeter lobes, perhaps that's suppression of visual perception to allow an openness to immaterial ways of understanding. So it's so difficult to interpret and so difficult to know.

Andrew Newberg:

Oh, absolutely. But that's a really interesting issue too and I completely agree. When you talk about how whatever it may be immaterial about our being. Well, one of the statements that I've always made is that in some sense, one of the most fascinating findings I might have is that somebody says I had the most incredible mystical experience while I was in the scanner and the scanner shows nothing.

Michael Egnor:

Right, right, right.

Andrew Newberg:

And maybe by default, you actually find the spiritual, so to speak the immaterial.

Michael Egnor:

Right. At least the totemistic tradition just roughly considered obviously St. Thomas didn't think a lot about MRI scanners.

Andrew Newberg:

Right. Right.

Michael Egnor:

From the totemistic tradition, one would expect there to be no correlate.

Andrew Newberg:

Exactly.

Michael Egnor:

So it's very interesting.

Andrew Newberg:

But let me say this also, which is another little interesting side too, which is that part of what I think is an interesting ability to do is to think about how we think about these things. So when somebody conceives of a soul as immaterial, what does that mean? How does a brain understand that and how do we engage

that in an idea? Part of it is what is the brain doing when it's thinking about an immaterial soul? On the other hand, again, part of what I think is also so important because it gives it a little bit of this scientific point is could we go to a church for example, and ask a hundred people what do they think about the soul? And how would they describe it or define it? Or what terms would they use?

Andrew Newberg:

And see does everybody say it's immaterial? Does everybody say it doesn't interact with the brain? Do people say it doesn't? How do people actually start to think about these kinds of questions? And that in and of itself provides some fascinating viewpoints in terms of how our brains think about these questions. We did a study for one of our books called how God Changes Your Brain, where we asked people to draw a picture of God. And we said what just pops into your mind when I say what does God look like? You know, what pops into your mind? And it was fascinating to see what people would draw and sometimes people would draw a very anthropomorphized like the Sistine chapel kind of concept of God as an old man with a beard and flowing hair.

Andrew Newberg:

Other people drew very abstract ideas of nature and fascinatingly, some people left it blank because they said, God is undrawable and there's no way for me to actually draw God. But each one of those answers is fascinating in terms of, well, how does the person actually engage in what they're believing in and how do they think about that? And so there's to me really interesting things that can continue to be explored as we look at these questions.

Michael Egnor:

What's rather fascinating is that there's a fantastic book called Otherworld Journeys. And honestly, I'm blocking on the author's name.

Andrew Newberg:

I think it's Zaleski.

Michael Egnor:

Yes, yes.

Andrew Newberg:

Yes. I'm familiar with that book. Yeah.

Michael Egnor:

Carol Zaleski. I couldn't put it down, it absolutely fascinated me. And what she points out that I think is so intriguing is that throughout human history, there have been these spiritual experiences in all cultures, in all eras, and they seem to have significant commonalities, but the actual content of the experience seems to be determined significantly by your culture, by the world that you're living in and a person living in our culture would have a different experience of God, then a person living in the middle ages or a person living in ancient Egypt or a person living in the far east. And so in some sense, I think what she conveys is that the experiences that people are having are transcendent and they can't be expressed in their actual form. We can only express them through things that we know in our daily lives and that fascinates me.

Andrew Newberg:

Yeah. Well, I absolutely, I mean, that raises a whole other area, which is, to me very important in the field of neurotheology, which is these experience, she was focusing a lot, as you mentioned on actually on like near death experiences and right. I mean if somebody has a near death experience and they see a being, a Christian may call it Jesus and a Muslim may call it Allah, and a Hindu may call it Vishnu or something like that. But so then the question becomes is do they all see the same thing that they are, as you said or they're describing it the best they can based on their prevailing belief system, or did they actually fundamentally see something different? And in a similar context, we did this whole online survey of people's most intense spiritual experiences.

Andrew Newberg:

And some people would say, I felt God, some people said, I felt a force. Some people felt love. Some people felt awe. Again, are they the same experience interpreted differently, or are they actually different experiences? And I think that by exploring the descriptions of these experiences, and maybe if we can somehow get to something that's going on in the brain and trying to understand that we can see where the similarities are and the differences, maybe everyone perceives a being, but they call it different things. But the being is the universal trait or maybe one of the common experiences in these mystical experiences is the feeling of oneness and connectedness with God, with the universe. So does everybody have that experience, and if so, what do they feel connected to?

Andrew Newberg:

And which are the more perennials universal characteristics of these experiences and what are the ones which are unique and how do we understand those unique characteristics? So, yeah, so really fascinating and thinking about, again, what's really happening in the experience? What is happening in the person's consciousness and in mind, what's happening in their brain? And see what we can do about trying to understand the nature of those experiences as best as possible. And of course, again to me, one of the most fascinating things about all of these experiences is that, and we wrote an article on this, that people describe them as being more fundamentally real than our everyday reality experience. And of course, for the other listeners, we all have that because no matter how real a dream feels when we're asleep, when we wake up, we say, oh, that was just a dream.

Andrew Newberg:

We immediately relegate it to an inferior perspective of reality, but that's exactly what happens in the context of people having these mystical experiences, which is that the everyday reality then becomes inferior, and I don't mean that quite so hierarchically, but that it's not as real as these profound experiences. And of course, again, what does that mean? Does that mean that they really have achieved a connection that their brain has connected to a different plane, a different way of looking at the world that it hasn't been able to do before? Or is it just a manifestation of the brain? I mean, it's really quite fascinating.

Michael Egnor:

Absolutely fascinating. One thing we had spoken about a little bit in the last segment which you mentioned, which is absolutely fascinating is the impression that people have when they have spiritual experiences, that there is a greater reality to the spiritual experience than there is to their ordinary waking life. And that's a hallmark and in many situations, people can't even find words for it. And many of the great mystics have made it clear that they can't really describe what they experience, but that

what they experience is more real than anything they can describe. And people who have near death experiences very often say that what they experienced was, was far beyond. And if you think about it, the near death experience, if indeed is associated with a lack of activity in the brain is an extreme example of what Thomas Aquinas or even Aristotle would say is an immaterial experience of the mind. It's an experience of the mind that is not material, that doesn't come from the brain. So an absolutely fascinating insight.

Andrew Newberg:

Well, and the study of near death experiences, here's where a neuro theological approach could have some really powerful paradigm shifting implications. And a colleague of mine has actually been trying to do some more formal research looking at these experiences that obviously, as you mentioned, I mean, they tend to occur when people are near to death, obviously, the name. And so the idea of trying to corroborate what are well known probably thousands of anecdotal stories of people describing the room, describing maybe a patient in another room. You know, if we can really try to validate that scientifically, that could be quite fascinating. And there are fairly elegant ways of designing a pretty simple study where if we go to trauma bays, if we go to cardiac areas where we know that there's a high likelihood of people who will be close to death and then find out who that happened to, find out who may have had in near death experience, and then be able to challenge them by asking them specific questions, maybe having certain things in the room.

Andrew Newberg:

One thought has been to have a shelf above a bed with some kind of picture on the other side, so a picture of the Eiffel tower or something like that. And of course, if they said I died, I floated up to the ceiling and then I saw this picture of the Eiffel tower, that could go an incredible long way of trying to prove that there is this immaterial soul consciousness, whatever that goes beyond what the physical body is able to do. And so there if we're creative about how we think about some of these studies, there could be some really fascinating opportunities to expand the way we really do think about the world, the way we think about ourselves and how we understand ourselves. Cognitive neuroscience is you were alluding to earlier, I mean, is trapped in this very materialistic perspective, which I can appreciate.

Andrew Newberg:

And there's certainly a value to thinking about things that way. And I know with your background and obviously doing surgery on the brain and helping to "fix" people who have brains that are with Parkinson's or Alzheimer's or a stroke or something like that can be absolutely essential to helping people. But that doesn't mean that's all we are and trying to find that other part of ourselves, there may be some really intriguing ways of trying to do that.

Michael Egnor:

When I began, when I was interested in neurology and neurosurgery as a medical student, and subsequently in my career, I initially thought that I would gain a very deep insight into the soul, into what it meant to be human by studying the brain. And I've come to realize that there's much about us that doesn't show up in the brain and that the brain is an organ like any other, and it's an organ that allows us to perceive, allows us to remember, and to move and do things like that and to have emotions, but that there's a very large part of human experience that doesn't seem to come from the brain. The brain's involved in it, but it doesn't come from it and I've become passionately convinced of that. And

that's one of the reasons why I've embraced totemistic psychology is that I think St Thomas had the explanation that best fits what I've seen in 35 years.

Andrew Newberg:

And even one of the things that I challenge my students on would even if one takes a very materialistic perspective I mean, it becomes, I guess, in the world of consciousness study is the hard problem of where does consciousness actually come from. And I say, well look, I mean, if you take a materialist perspective, you've got sodium and potassium ions rushing across the nerve membrane, you've got blood flow, you've got metabolism, you've got electrical activity, you've got neurotransmitters crossing synapses. So where in all of that is our thought? Where in all of that is our consciousness? And how does one understand that? And, I mean, obviously, it's a fantastic mystery, but that's where also where I guess I personally feel that just taking a scientific perspective obviously becomes limited based on what we were just talking about. Having only a philosophical or theological approach may miss the biological piece of it.

Andrew Newberg:

And so that's where I keep coming from in terms of maybe this integrated approach that looks at finding pieces of both, the science, as well as the spiritual, can that push us down the path a little bit more in a way that we've never been able to do before? I don't know if that will ultimately lead to the answers, but at some point I feel like there's something about trying to find how the material and the immaterial work together and without being dualistic and maybe it even has an analogy to the quantum mechanics of my late colleague, [inaudible 00:50:55], and I wrote an article called consciousness in the machine, and we argued that ultimately the brain and consciousness are two ways of looking at the same thing.

Michael Egnor:

Sure.

Andrew Newberg:

And much like looking at a particle and a wave, it's like two ways of looking at the same thing. And now I'm not saying that we're relying on quantum mechanics to answer that, but that analogy of maybe we tend to say maybe when we look for... If I do a brain scan, I will find a brain change and if I look for the experience, I will find the experience. And so maybe they are different ways of just looking at the same thing. But again, these are the kinds of challenging questions for us to pursue and to look at where we can take the science and where we can take our contemplative processes to help us elucidate and answer to those questions.

Michael Egnor:

The positive experiences, spiritual experiences that you've described are absolutely fascinating. There are however, quite a few negative spiritual experiences that people have. Anything from losing one's faith to sin, even to demonic possession, things like that. Have you had a chance to study that, or is that something that you would like to study?

Andrew Newberg:

Well, definitely something I would love to study. We have definitely thought about it. In our survey, we certainly found that while 95% of people, it's an overwhelmingly positive experience, there is that small percentage of several percent, 5% or whatever who have experiences that are negative. And of course,

as you mentioned, I mean, then there's even the more obvious joining cults, terrorists, what is it about going to the ISIS website and saying, gee, this sounds good, let's blow people up. And of course, every tradition has had their violent tendencies at times. So what is it that leads people in down those very dark pathways and you even mentioned the other one.

Andrew Newberg:

And again, I'm sure you've dealt with this in your own practice in one way or another that I'm fascinated by the fact that when people are struck with some tragedy in their own life, the loss of a child or something like that, some people turn towards God as a way of God's going to help me through this and my religious and spiritual faith are going to be what helps to cope and manage through this while other people say, how could God do this to me and they turn away from God.

Michael Egnor:

Sure.

Andrew Newberg:

And that's again, I mean, on one hand, I think neurotheology has an interesting opportunity to help us understand those distinctions. What goes on in the brain of somebody who feels like joining a cult is the right thing, versus somebody who feels like just being a religious individual who wants to improve the world and so forth, what are the differences there? But also, there may be some interesting opportunities on a more I guess therapeutic perspective, if you will, to say what are the things that are going on that lead somebody down that darker path, that negative path?

Andrew Newberg:

And can we actually help to understand that so that we can find more effective ways of redirecting people into something that is more positive and more constructive? And there's been a lot of work over the last couple of decades taking people with, for example, depression and recognizing that there could be a spiritual component to that as well. And that incorporating religious or spiritual concepts into more traditional psychotherapeutic interventions could actually be very helpful for the right person. I mean, obviously if the person is a very devoted atheist, then maybe not, but for someone who has a rich religious background, helping them to engage that in a way that might ultimately be therapeutically effective could actually be very beneficial for somebody as well. So again, there's this ranging all the way from the esoteric of, well, what does this dark side, dark night of the soul actually mean?

Andrew Newberg:

And what might it look like to understanding the nature of people who are engaged in these negative aspects of religion and spiritual beliefs to more practical ways of helping people work through them and help them to become healthier, develop a better sense of wellbeing and health. And in fact, the most recent book that we wrote called Brain Weaver talks about that spiritual side of ourself and how valuable that is and necessary it is for us to have our overall health and wellbeing. I mean, we have to eat well, we have to exercise. We have to do all the other things that take care and nourish the body. But the spiritual side of ourselves are fundamental as well.

Michael Egnor:

And the ongoing debate between theists and atheists, it's not uncommon for the respective sides to trade accusations of mental illness. Atheists will say that theists are basically just marginal psychotic

who are imagining God's there, and so on. Theists will say that atheists are autistic with respect to God, and so on.

Andrew Newberg:

Right.

Michael Egnor:

Do you find any correspondence between the brain activity in people who are either theist or atheist with genuine neurological disorders like schizophrenia or like autism?

Andrew Newberg:

Well, I think, to me, at the moment, and while it's always hard to look at a given individual, usually we're looking at populations, but there have been some interesting studies that have looked at these kinds of questions. And I'll give you one example. This was not one a study that I did, but I thought I think may shed some interesting light on your question, which is that there were a number of studies that were designed to try to help to show and these were people who had some obvious biases against religion that people who were religious were not as intellectually smart or weren't as good at solving problems and things like that. And they would have them do these different syllogisms or logical problems or whatever.

Andrew Newberg:

And somebody got very clever and they said, well, maybe it has to do with the nature of how the questions are portrayed and worded and what they did, there was this nice little study that was done, where they took religious individuals and non-religious individuals, and they had them solve these different logical problems. And they had some logical problems that were more positive to religion, for lack of a better way of saying it, and some that were more negative towards religion. And what was interesting was, was that the people who were religious did really well on the logical problems that were positive towards religion, but didn't do as well on the ones that were negative. And the atheist, it was just the opposite. So it wasn't like their overall logic was better or worse, but it operated in different kinds of ways.

Andrew Newberg:

And another interesting example was that they did a study of religious believers and non-believers, and they showed them pictures that had been blurred. So almost like a roar shock kind of thing, but they were actual pictures. And what they found was that people who were religious were more likely to see things in the picture that were not there, that were not originally there in the picture, but didn't miss things. On the other hand, the atheist never saw something that wasn't there, but sometimes didn't see things that actually were there. And so my take on a lot of this information is that I feel that the idea of how we look at the world and how we are biased to look at the world in one way or another is very much is how we shape the beliefs that we ultimately hold.

Andrew Newberg:

So it's not that one side has a mental disorder or the other side has a different kind of mental disorder, but that there are different ways in which we look at the world and then that leads us down different paths of thinking about the world one way or another. Same can be said of Republicans and Democrats, or even just in academics. I mean, some people are really good in mathematics and science and others

are good in the humanities. It's not that one person is better or worse or right or wrong, it's just that they just look at the world differently. And we talked about this a lot in the Why We Believe What We Believe book that to us, it seems extremely hard to say that people who are deeply religious have psychosis or delusions or whatever, because no, I mean, yes, of course, there are some people who do, but as there're atheists who do, but for by and large, I mean, these individuals are highly functional.

Andrew Newberg:

And I mean, going back, I think I mentioned earlier this study we did of speak people speaking in tongues, when they were speaking in tongues, I mean, they looked completely psychotic and crazy and all that. And then five minutes later, they're totally fine and these are all people who have jobs and have families. I mean, they're totally normal in society, but they get into this state that is just so fascinating and unusual.

Michael Egnor:

What goes on in their brains when they're speaking in tongues?

Andrew Newberg:

Well, I mean, so that was one of the first times where we saw that frontal lobe activity actually decrease. And so because they talk about them, they say that they are not making it happen, that it is something that is happening to them. In fact, I had this little funny interchange with one of the first people who did the study and I said, okay for the first state you are going to speak in English and then in the second state you are going to speak in tongues and they corrected me and they said, no, no, no, that's not how it works. They said I can only get myself into a state in which it might happen, I'm not making it happen. And so we tended to see the frontal lobes decrease in those individuals who were speaking in tongues.

Michael Egnor:

And was the decrease in the speech area?

Andrew Newberg:

Yeah, exactly. Yeah, both in the larger frontal lobe, as well as in brokers area about the production of speech. So then the question is, so what exactly is making those sounds?

Michael Egnor:

I mean, that's astonishing. I mean, it's very consistent with as you pointed out with the Christian understanding of what speak tongues is.

Andrew Newberg:

Exactly. Exactly.

Michael Egnor:

Oh, that's absolutely fascinating.

Andrew Newberg:

But it also speaks to the fact that this is a person who is able to enter into a state and then be back in the everyday reality state. And so I don't believe that these individuals meet any criteria for psychosis, I mean, they're completely normal otherwise. And some of them I knew very well, what wonderful people.

Michael Egnor:

Yeah. I've known people who do that, they're very simple people.

Andrew Newberg:

But by the same token, let me just flip the question around. I mean, there are schizophrenics who believe that they are the Messiah, that there are people who have temporal epilepsy who have unusual... That's interesting and important as well for us to look at because there is a relationship in certain circumstances. And does that tell us something about how does the brain work?

Michael Egnor:

I personally believe that schizophrenia is the most interesting disease in medicine. It's also one of the most tragic because it robs a person of so much of their life.

Andrew Newberg:

Oh, absolutely.

Michael Egnor:

It's absolutely fascinating. And I have this feeling, I don't know if you share it, that we have not scratched the surface. We have drugs that will cover up some of the symptoms, but we don't know what's going on.

Andrew Newberg:

No, absolutely.

Michael Egnor:

Does your work give you any insight into mental illness? Is that something that you've been able to address?

Andrew Newberg:

Well, I mean, a lot of my more traditional work with imaging has looked at a variety of different neurological and psychiatric conditions. We have studied people with head injury. We've studied people with depression, we've studied people with Alzheimer's, Parkinson's, and so forth. And so there are certainly overall changes that are seen in the brains of these individuals. And some are more uniform, like Alzheimer's tends to have certain specific patterns, but as you mentioned, I mean, some of the other ones like schizophrenia, which just can be so heterogeneous in terms of what the symptoms are and how they affect people, really hard to get a handle on. And as you said, I mean, part of it is that we know that you can give a drug that blankets the brain in a certain way and maybe calms them down or something like that, but it's not fixing the fundamentals of who they are and whether various combination of spiritual practices and meditation and diet and nutrition and the right medications, we

don't know, we really don't know what these individuals are going through and how their brain is actually operating.

Andrew Newberg:

But again, we talk about this a lot in our Brain Weaver book about how do we try to maintain a brain as healthy as possible? But once you get into some of these more severe conditions, it is very challenging to know how best to manage them and we just have to keep looking at how incredibly complex the brain is and trying our best to understand it and figuring out the best ways of trying to help people manage it in effective ways.

Michael Egnor:

It is wonderful work, Andrew. And as you may know, I've had some reservations about neurotheology as a field because I'm afraid that purely an ideologically materialist perspective will arise from this kind of research, but it certainly seems from our discussion and from your work that you're doing it in a way that really is trying to get at the truth. And that's a wonderful thing and it's a fascinating topic.

Andrew Newberg:

Oh, well, thank you. And I share your concerns too, and I've tried to point that out with people when they're heading down paths that are not necessarily the most effective answers to the questions, they have to be careful about what any of these studies mean.

Michael Egnor:

Sure.

Andrew Newberg:

And I know we're getting close to the end, but even studies where people take different substances, like psychedelics and they have these experience. We have this Western perspective that there are artificial and they're created by this drug, but for shamans throughout the centuries and millennia, it's the doorway to open the brain to that other world, that other realm. And again, I don't know what's really going on, but we have to really pay attention to all the different perspectives that come out of this result.

Michael Egnor:

And there's a tendency I think in science in general and neuroscience has of it too to label experiences that people have is necessarily being purely pathological, purely explainable in mundane ways. And that really isn't necessarily even a scientific way of looking at it, because there have been millions of people who've had experiences like this.

Andrew Newberg:

Exactly.

Michael Egnor:

And to just dismiss them all as being just on drugs or crazy or something that isn't really scientific either.

Andrew Newberg:

Exactly, exactly. I completely agree.

Michael Egnor:

Well, I am very grateful for your time. It's been a wonderful discussion and I would like to do this again.

Andrew Newberg:

That would be great.

Michael Egnor:

I'd like to come back. We would love to have you, and thank you very much.

Andrew Newberg:

Thank you. I appreciate it.

Michael Egnor:

Thanks. This has been Andrew Newberg. He is a pioneer in a field of neurotheology. I'm Mike Egnor from Mind Matters News. And thank you for listening.

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 Eggbert. The opinions expressed on this program are solely those of the speakers.