



Can Physics Provide Insight Into Meditation?

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Let me begin by first thanking George Oerke for inviting me here today and for his guidance in helping me refine the topic of my presentation. George gave me a call a few weeks ago and told me that I had been recommended by Dr. Mark Gibney, a colleague of mine at *UNCA*. Dr. Gibney spoke to you here a few weeks ago.

George came over to my home – a very thorough guy – to arrange the program. I told George I’d spoken at the *Unitarian Universalist Church of Asheville* about 10 years ago. I talked about the “Tao of Physics.” There is book by that title. Perhaps I could speak on something similar, like physics and Eastern thought or about physics and meditation.

Now George is a very polite guy, but he can also be intimidating at times. He shows me a pamphlet from Dr. Gibney, which describes Dr. Gibney’s book on the topic that he spoke about. And George asks, “Do you have a book?” I replied that I didn’t have a book.

George responds “Do you have references?” It’s not easy to locate references on this topic. There is not much written that brings West and East together. But I am able to find some references for George. This guy’s a scholar. He wants all these references – to check up on things – so I send George references by e-mail.

George, a very nice guy, makes a special trip for me so I can check out the piano for my performance of the Brahms. I appreciate that very much. And then George shows me the newsletter he put together advertising my talk: “Can Physics Provide Insight Into Mediation?” I’m reading it and I spot this line toward the end. I say, “Now George, where did this come

from? ‘Present a right, correct, and special way to see truth.’ Did we talk about that? I don’t remember talking about that. Where did that come from, George?”

George says, “You sent me that.” I reply, “I didn’t send you that, George. What do you mean I sent you that? I sent you that?” He says “Yes, you sent me that.” I continue, “I sent you that, George?” Then George responds that it was in the reference material I had sent him.

Oh, oh! George reads everything. I have to be careful what I send that guy. Shortly afterwards, when I am driving home, I am thinking that the quote “a right, correct, and special way to see truth” was not in what I sent George.

George doesn’t know this, but I go home to my computer and I pull up the references I sent him. I start to search. So I punch in the word “right” and search through the first reference, one written by a physicist. Nope. Nothing shows up there. Alright, so I go to the next article, thinking George must have gotten the quote from somewhere. So I’m pumping in this word “right” and “correct” and trying to find this phrase. Finally, I find the word “right,” but then I don’t encounter the quote.

But I think wait a minute, wait a minute, wait a minute. This is the paragraph from which the quote comes because later in the paragraph I see the words “correct,” “truth,” and “special way.” So I look at this and then as I read it, I figure well, it is very, very perceptive that George would pick this particular passage. This is really the core, a core passage. George did his best to summarize it here in a short space, but I want to take the time to read the entire

paragraph. Let me use it as a basis to start my talk, something which I hadn't really intended to do. George is directing me in more ways than one here – setting the stage for what we are going to talk about.

The source¹ can be traced back to U Ba Khin (KEEN), who died in 1971, born in 1899; and his student Goenka (GOIN-kuh). U Ba Khin was the first Accountant General of Burma (now Myanmar) after Burma achieved its independence from Britain in 1948. You might remember that India achieved its independence from Britain a year earlier, due to the great work of Gandhi. Gandhi used a nonviolent way, a way of love, to bring an end to the oppression.

This official of Burma had taken up meditation sometime during his life and he had become a meditation teacher. His student Goenka, Indian by descent, was also born in Burma.

Goenka is from a real rich business family and he grows up to be a very successful business person. Goenka begins to have severe migraine headaches due to the fast-paced world of business. He connects up with U Ba Khin and this meditation idea. His headaches are just incredible and the doctors give him medicine. But they cannot control the headaches. So he takes a 10-day course, a Vipassana² (vih-PAH-shin-uh) meditation course. We will shortly speak about what Vipassana means.

Goenka is frustrated after a couple of days. He's a business guy. If you take 10 days off to do something, and after two days you are going nuts, you're saying I'm out of here. I mean. What is this? This is ridiculous. I'm going to get out of here. Then, one of the course servers encourages him to stay one more day. Just give it one more day to see what happens.

Well, he stayed that one more day, a third day, then he stayed the whole ten days. And after he finished the course, not only did meditation do wonders for his migraine headaches, he became a meditation teacher himself (14 years later).

So George went right to the core of meditation. In this particular passage the word Vipassana is defined. The word "pali" in the discourse refers to the ancient language in

which the Buddha's teachings were orally transmitted and recorded. So let me give you this quote, which is going to be the beginning of our theme for today.

"Vipassana is an ancient pali word meaning the right way to SEE / the correct way to see / the special way to see / observation / total, holistic observation / meditation / observation of the reality 'as it is' / observing 'what is' / insight. Vipassana is the experiential aspect of the teachings of all Buddhas. Needless to say such an observation, such an enquiry into the truth is universal, non-sectarian, non-ritualistic, non-dogmatic and liberating. It is an art of living.

"Vipassana is not a technique or a ritual to be followed mechanically. Vipassana is a process of observation – observing the truth from moment-to-moment – observing the truth as it is."

So thank you, George. I really appreciate that you went right to this key passage. I want to talk about this. The thing that immediately strikes me when I read this is that the philosophy of the *Unitarian Universalist (UU) Church* and the words of the passage seem to be in alignment. "truth is universal, non-sectarian, non-ritualistic, non-dogmatic and liberating."

Compare this to the words in our program pamphlet that describe the *UU* philosophy: "In the tradition of free religion, we are a welcoming and nurturing community for all generations. We come together respecting diversity, celebrating life's complexity and challenges, honoring the many paths."

Now, this particular idea of diversity and truth in many paths reminds me of Einstein. It's time to bring in some physics here. I recall Einstein and his theory of relativity, which I have loved and studied for many years. Einstein's theory is considered law today because it has been demonstrated by "zillions" of experiments.

You see, in physics, we have to do experiments. We can't just believe because someone says so. Einstein's theory of relativity says there's all these reference frames. Everyone has a different frame of reference. You're moving that way; I'm moving this way. You're going there. You're on a planet.

Someone is on a rocket. Someone is in an elevator. Another is climbing stairs.

Einstein says that in all these reference frames, these different paths, there are differences. Space and time are going to be distorted from different points of view. But, something important is not really emphasized enough by those explaining Einstein's theory of relativity. This is because the name "relativity" is not the name that Einstein wanted to call it – he wanted to call it "Die Invariantentheorie," which translates as invariant theory – a theory of absolutes really. Why is that? Although Einstein's ideas indicate that space and time are different for our different paths, his theory is basically about what is the same in all the reference frames.

The first postulate of the theory of relativity says that in all frames of reference, the laws of physics are observed to be the same. His special theory in 1905 considered motion with constant speed, but in the general theory (1915), Einstein treated all frames of reference, accelerating or not accelerating. In all of these frames of reference, the laws of physics are observed to be the same. They have the same form. Now what's that? That's amazing, alright. Space and time are different and there are a lot of differences on the different paths. But the laws of physics are the same. That's postulate one.

The second postulate says, in all these different reference frames, if you measure the speed of light, you're going to get the same value – the exact same value. Your space and time may be different and "messed up" so to speak, but when you take the ratio to find the speed, you get the same value.

So, this is in a sense, contradictory – we have different paths, yes, and we have differences; but, there is a common theme, common conclusion, you see, in the paths. And that's what Einstein is teaching us with relativity. I think this is a good analogy of what we are talking about here. – diversity of paths, yet a common quest – to know one's self and to live a spiritual life – the art of living.

Last week, when I visited this Church I was amazed at the sermon topic because it was basically the same topic I am interested in

talking about today. The idea is the importance for setting aside time for resting, for reflecting. In our busy schedules we often neglect this. And that was the theme of last week's sermon, that we need to make time to reflect, to reflect and look inward.

And last week I heard a marvelous range of activities among examples of the art of living that provides us with time to reflect. One was cooking a meal for friends, taking time away from the fast-paced life of western society. Another was working in a garden, like George does, experiencing the beauty of nature. Both give us time to reflect. An activity for me is playing the piano – taking time from a busy schedule to sit down at the piano and experience the beauty of music. All of these do something for us, namely, recharges ourselves – and in that sense, this reflection helps one become a better person all around.

The goal of the art of living is to be able to reflect on what we do moment to moment. And in this sense, I think we have a goal to be meditating all the time. If we define meditation as observing what is, then, our goal is to always meditate.

Let's consider an analogy with exercise. If we want to exercise the heart, we can swim, we can play tennis, we can play basketball, we can do a lot of things. These are analogous to the reflective activities I mentioned earlier – like playing the piano, tending one's garden, cooking a meal for friends.

At *UNCA* – I often see the basketball players in the gym. They are doing all kinds of activities like lifting weights and practicing basketball moves on the court. But sometimes they just say look, let's just run in circles around the track. You know, what's that? At least if you're practicing basketball, you're dribbling the ball, taking shots, you're doing something. But now you're just running around the track for like twenty minutes? Yes, that's good conditioning for the heart. You want to do that.

Now, if we look at our service today, one activity is being silent. I would like to draw an analogy here with exercise. If you strip down exercise to basics, you want to get your heart pumping. So I'm going to run around the track

for 20 minutes, or whatever. What about just being silent for about 20 minutes? What's going on? Why should we do that? That guy is running around the track and this person is sitting and staring in the corner. What's going on?

Well, the definition of meditation I like to use is observation of reality as it is from moment to moment. So technically, one would always be meditating, like one's heart is always beating. One's doing something, right? But reserving time to be silent is kind of analogous to reserving time to just run around the track, to run in circles for maybe 20 minutes.

What does this do for our basketball player? Well, it helps her play basketball better as her heart gets conditioned. It actually helps her prepare for exams. She is not as nervous when she takes exams. Her immune system is boosted and her mental state is more alert – for just running in circles for about 20 minutes from time to time.

Some who don't understand may say that's a meaningless activity and definitely a waste of time. She has too much time on her hands. She should do something, maybe get another job or something, you know, stop running around the track.

So certainly the practice of meditating and apparently doing nothing may draw some criticism. What are you doing? I mean you're just silent, right? But this silent activity has similar effects in boosting one's immune system and making our minds alert. This carries over to our day-to-day affairs. But what are we doing during meditation? Nothing?

Well, here is where I like to use physics to help with insight, and bring physics into the discussion again. Now I have to stress that I am not, I AM NOT, N-O-T, speaking for my profession. Alright? My fellow physicists are likely to think I am a crackpot if I start mixing physics and meditation. Rather, I am speaking as an individual – a free-thinking individual, who happens to have a Ph.D. in theoretical physics. That's more accurate.

What is physics? What is science for that matter? Often, I cringe when I hear definitions of science as hypothesis, control variables, and

all that stuff. Oh, I've never done that. I'm not a scientist then.

Science can be defined in many ways, but what's the stripped down version? What is the simplest definition that all scientists would probably agree with and say yes, that is basically what we do. Well, science is observation. If you observe the physical world, the outer physical world, if you observe it, you are doing science. When the Arab astronomers observed the beautiful night sky for over a thousand years and named the stars, they were doing science. We inherit those names and use them today.

So observation of the external world, the material world, is science at the most fundamental level. Meditation is observation also – but observation of our inner world. How do you observe? Let's look at effective observational practice in science. That may offer some help or provide insight as to what might be an effective observational technique for meditation.

Effective observation in science is observing what is. Now, I want to restrict myself here to fundamental physics. I don't want to talk about applied science like engineering, where we control nature and make inventions. That's all good stuff too, but I don't want to talk about that. I want to talk about fundamental physics, discovering the laws of nature.

Here is how Einstein expressed this idea. Einstein once indicated that he was not really interested in applications, inventions, and all that. He was rather interested in the basic laws of the universe. He compared these basic laws to the thoughts of God. He wanted to know the thoughts of God, the equations that govern the universe at the fundamental level. He said that all the rest are details. He wanted to know the basic laws of the world: electricity, magnetism, gravity, and how they are connected in a fundamental way.

So, if I want to discover the basic laws of nature, I observe what is. If I'm observing a ball falling to the ground to understand gravity, I observe it as objectively as I can. I don't say that the ball should be going faster. I don't say that the universe is messed up, that the ball

shouldn't be accelerating at 9.81 meters per second squared, but rather it should be 13. I will probably not discover the beautiful laws of nature if that's my attitude.

What if I think it should be a certain way and I start to justify and say really it's not 9.8 because I want it to be perfectly 10? So I think maybe it is 10 and I just didn't observe it right the first time. So I start to justify it. It is really 10. It's not 9.81. That's also not effective practice for observational methods, right?

It's time for another George story. I love these George stories, but George Oerke is probably wondering what I am going to say next?

I send George an excerpt from a physicist on the method of observation (for our reading today). George rejects it. He says it is too ambiguous. He tells me to fix it. I'm thinking this is incredible, really amazing. George has high standards for a clear and practical reading.

So I start wondering. I have to do something fast here and get something to George. It's getting late in the week. I find I can't fix the excerpt. So I go looking around and can't seem to find anything to replace it. Then I think, wait a minute. George, in his wisdom was directed to the passage deriving from U Ba Khin and Goenka to advertise my talk. Why not go there and find something else farther down in the passage and give him that. And he'll probably accept that. I did and sure enough he liked it.

It is in this reading that we hear about the observation of sensation, without identifying with the sensation. That's an excellent definition of a scientific observation. I observe a ball falling to the ground without identifying with it, without liking or disliking. If you want to have some kind of description of my attitude, rather say I am vitally interested. I am enthused. I love what I see, no matter how it's going to come out. Whatever way the experiment comes out, I am discovering nature. I love it, whatever it is. I am beyond good or bad. I am beyond like or dislike. I just want to be honest with nature and discover the truth. This is objective scientific observation, which was described in the reading.

Now, getting back to migraine headaches, I made a discovery for myself that's related to all

this, when I had a migraine headache. If you never had a migraine headache, maybe you were sick from some other thing in a similar way and you will be able to relate to what I am going to say.

In my particular case it is a migraine headache with a sharp pain behind the eye, inducing a nauseous feeling in my stomach. I don't want to move. And the aspirin is there in the cabinet. I think wait a minute; I'm at home. I can get to bed. I can rest. So let's not take the aspirin. It's there. If I need it, I can go back and get it. It's not going anywhere. Or I can hide one under the pillow to make sure I have one. But let's see what happens here.

Now, have you ever noticed when you are sick, that lots of things that usually bother you from day to day are not bothering you any longer. Because you're sick. Alright? You're too exhausted. You're too sick to worry about the usual stuff. So I'm curled up in bed and I notice that things that were running through my head during the past few days, eating at me, and making me miserable, are not there anymore.

The kind of stuff I'm talking about is this. Something happens to you that you don't like. You're upset. Or some are not acting the way they should be acting, according to you. Or, take circumstances in life. Maybe there is one circumstance in life that you just don't like. All these annoyances that are usually with me aren't there. Because I am sick. So I'm surprised that these things are not bothering me. But I want to make sure. I want to make sure that this stuff is not bothering me. I'm very weak, but I still have enough energy to do one experiment. I try calling up the stuff. Like this guy that did that to me or said this to me yesterday. Or there was this bad thing that happened to me. Let's try to bring them back intentionally. So I start trying to do that but I can't. They're just too weak. These things are not making me upset anymore.

I'm thinking that this is amazing. What's going on here? Like nothing is bothering me. Well, of course, the sharp pain is killing me behind my eye. And I can't hardly move because it will upset my stomach. But other than that, all the other stuff is gone. It's as if my body has started shutting down compartments

because my body needs repair. It needs some repair because we have a problem here – like a state of emergency. The body says we don't have time to worry about what so and so said about you yesterday, or how you had a bad hair day, or whatever else. We got something serious we're dealing with here – a migraine headache.

So I knew that my body was intelligent – that the life principle is intelligent. And I started to feel a warmth. I just laid there with a feverish kind of feeling. And I drifted off to sleep. And when I awoke hours later, my headache was gone and I felt afresh. And then, all the usual stuff started to bother me again. Wow.

The tormenting thoughts came back. You know the kind of thoughts I am talking about. The thoughts of the past – you should have done this. You should have done that. You messed up there. You should have done it that way. Five years ago you should have done such and such. Or the future thoughts. What if this happens to me? What about that? What are you going to do if that happens? Suppose they do this to you or that?

Now I heard a discourse by a wise medical doctor many years ago, Dr. Robert Gibson,³ who passed away in 1994. He challenged us to be free to experience whatever comes in our life – at the moment. If you are sorrowful or whatever, be free to experience it. Don't be afraid.

So I wondered what would happen if I am open to the power of the inner life when I am generally healthy. After all, this power knows how to fix my migraine. It knows how to shut down emotional compartments when I need energy to heal. What if I turn that inner light on during the healthy time and say look – now look at the inner conflict, the suffering, the misery that I am in. Not the migraine now, I don't have a migraine today. In fact, I passed the physical. But at the moment I just want to turn that awareness on to my current inner state. What would happen then?

This is an experiment that I decided to do. Not one that I made up; one that wise great teachers have passed down through the ages. And it begins with knowing oneself – to know

thyself. And to be honest with oneself and to observe oneself.

So I began to allow the power of the inner life principle to work on my conflicts, my thoughts, and my sensations. And I found that the secret., and this secret can be verified by anyone – as George has pointed out in the earlier reading – true knowledge is one that one practices – that the secret is to observe the what is – without condemning and without justification – to accept what is – to be free to experience whatever happens to come your way from moment to moment.

And I remember many years ago a situation with a wise teacher who had studied under Dr. Gibson that went something like this. We complained to the teacher, saying but suppose this happens to us? I can't do that. I can't do what you're telling me to do. Then the wise teacher asked, has anything ever happened to you in your life that you couldn't handle in some way – one way or another? But we objected. Wait, suppose this happens?

That is not the question. But we kept thinking about bad things that could happen or that did happen to someone else. The response would be I am not talking about the other guy, I am talking about you. For you, was there one thing that you thought was an unfair, incredibly complex homework assignment you couldn't do, couldn't handle? Didn't you find some way, some resources, perhaps friends coming to assist you, to handle the bad situation in some way?

Then, we thought and said okay, but something too hard could appear tomorrow. If it hasn't already, what makes you think even to the day you die, that you won't be able to handle all situations in some way?

At the *University of North Carolina at Asheville* we read a poet, William Blake, who wrote the poem *London*. During the Industrial Revolution people had gotten away from nature as they had moved from the country to the city. Blake is critical of city life in the poem. The great poet expresses the added misery as mind-forged manacles. In other words, a lot of our misery comes from things we do to ourselves. The poet basically is saying that getting back to nature is a way to break these manacles. It is the

reflective, the contemplative, the setting aside of time for ourselves to look inward which leads to the mind-forged manacles snapping apart, one after another. Then, you become free and many things stop bothering you the way they used to.

Now I have no idea how I can restore balance to my body. If I should accidentally cut myself here and witness my body heal the cut, I do not comprehend the details of the healing. But suppose you say scientists figured it out?

Well, even if we get down to the point where we say the universe started by a vacuum expectation energy and something got created out of nothing, where did those laws come from? You see, there is always that question. You don't know where those laws came from. Isaac Newton would say that it is God that thought the laws and that's why the laws are there. God thinks the laws.

So at the fundamental level, we really don't know the mystery of life and what's going on. I don't really know how my migraine headache went away. That's like a miracle for me. The life principle did it. Then, let the life principle deal with my mental conflicts, my feelings, and sensations. I observe and simply get out of the way – get out of the way – let life do the job. Let nature, the wisdom of life heal my hand. Let nature heal me.

Now my physics profession is really going to disown me for the next statement. They're really going to come after me for sure because of what I am going to say next. I'm going to say that what I am talking about here is science. Furthermore, it is more real science than what we consider science usually. Yes, the meditation, the inner experience is science. Here is my reasoning.

When you read about a new research study, or Peter Jennings says "research shows" on *ABC News*, did you do the study yourself? You know sometimes scientists do the study over again and change their minds. And sometimes there is debate among the experts as to what the correct interpretation of the study is. But you didn't do it yourself. You took their word for it. That's not science.

I'd have to do every experiment myself. The great philosopher Descartes pointed out that it's

impossible to do that. But he said what he could be sure of is his awareness: "I think therefore I am." This refers to the inner life. This is where he could be certain. This is what you can observe directly. This is your laboratory. You can do experiments. You can see if these ideas are correct or not. And by doing that you are a scientist. You are observing and you are getting a conviction of a truth in life. So I claim that the study of the inner world is science.

The inner experiment of meditation is science. And this is what George referred to in the reading as personally-experienced wisdom – scientific conviction. You know a truth in your heart because you have experienced it.

Let's go back to internal observation. Suppose I start observing internally and I say, hey, I don't like that about myself. It should be this way or it should be that way. This is not objective observation. Effective observation is to note what am I at the moment, whether I be angry, hurt, sorrowful, or joyous. The art of living is to live in the present.

The thoughts in our minds can get frantic sometimes – jumping here and jumping there. Why fight them? Observe them. Don't get in the fight. Observe the fight. Dr. Gibson used to say get some popcorn and observe the circus – the thoughts going back and forth. It's party time, movie time. Turn the TV off. We have enough entertainment going on inside. So we observe them, observe everything coming and going with detachment, with an objectivity, which you acquire by practice. This is our meditative experiment.

Let me wrap things up here with quantum physics of the 20th century. Quantum physics of the 20th century is very insightful. Some physicists believe that a connection now has finally arrived between West and East – the Western analytical scientific method and the Eastern contemplative method. The "Tao of Physics," and "The Dancing Wu Li Masters" are books published a generation ago on this topic.

Please understand that I bring in quantum physics at this point as an inspiration rather than as a proof of some sort. Here is basically the upshot of the quantum physics and why a few

scientists, including myself, are so excited about how it inspires us to think about Eastern thought and life beyond physics.

Let's first consider the old physics. The old physics says that if you know where all the particles in the universe are, and how fast they're moving, you can predict the future with certainty. It is a mechanical universe. This is the universe of Newton. Quantum physics actually is more broad than Newton's physics because it includes both molecules and Newton's mechanics.

Quantum physics says that is not so. In Quantum physics, which is the more complete physics, we learn that when you do an experiment you actually interact in a fundamental way with what you're observing. You cannot separate what is observed from the observer. There is an interaction.

In fact, it's basically saying that the reality doesn't really exist until you observe it. When you observe it, you see either a particle or a wave and your conscious choice plays a key role in what's observed. We're talking about electrons here.

The quantum idea is that the observer and the observed are in some way connected in a profound way. The old physics is not like that. The moon is up there. It does its thing. You look

at it, fine. If you don't look at it, that's fine. But in the quantum world of microscopic particles that is not the case. When we do experiments we find that we create reality by our measurements and by our observations. This is the outer counterpart to the reality we create for ourselves through self-observation in the meditative experiment.

I would like to end with words¹ we can trace back to U Ba Khin and Goenka, who encourage us to embark on the meditative journey.

"Buddha taught us to observe suffering and the arising of suffering. Without observing these two we can never know the cessation of misery. Suffering arises with the sensations. If we react to sensations, then suffering arises. If we do not react we do not suffer from them. However unpleasant a sensation may be, if you don't react with aversion, you can smile with equanimity. You understand that this is all anicca (ah-KNEE-cha), impermanence. The whole habit pattern of the mind changes at the deepest level. ... Let us then study the mind and its peculiar characteristics and solve the problem that is now facing the world. Vipassana helps you to come out of your misery, come out of the bondages and enjoy real peace, real harmony, real happiness. May all of you enjoy real peace, real harmony, real happiness."

References:

1. The source for our quotes: http://www.buddhanet.net/bvk_study/bvk21d.htm
2. The Vipassana Meditation Website: <http://www.dhamma.org/>
3. The late Dr. Robert Gibson is also known as Rhondell: <http://www.rhondell.com/>