

ShrinkRapRadio #259 "The Slippery Slope of Reality Part 2"

David Van Nuys, Ph.D. "Dr. Dave" interviews Jerry Trumbule, MS, ABD

Excerpt: *Here is something: the transfer of information apparently happening instantaneously and my joy was in finding not the answer by any means but at least the capability of the system that resides in our heads and our bodies, of instantaneous communication at a distance so that all of these microtubules would be in constant sync and by the way, Hameroff is also an M.D. and an anesthesiologist and has studied that aspect of consciousness to the extent that I was thinking, oh boy, this is a system that's big enough and it's seems to be capable of housing consciousness and our inner life.*

Introduction: That was the voice of my old friend and return guest, Jerry Trumbule speaking about the work of Dr. Stuart Hameroff and it's implications for science generally and the study of consciousness specifically. Jerry Trumbule M.S. ABD and I have yet another one of our wide-ranging conversations. This is the second of what we hope will be three conversations. This time we focus on the work of Stuart Hameroff M.D. and Robert Lanza M.D. Dr. Hameroff has conducted very intriguing research on microtubules, tiny biological transistors which suggest a memory system much larger and more complex than that provided through the synapses. Robert Lanza, M.D. is considered one of the leading scientists in the world. He's currently chief scientific officer at Advanced Cell Technology and adjunct professor at Wake Forest University School of Medicine. He has hundreds of publications and inventions and over 2 dozen scientific books among them "The Principles of Tissue Engineering" which is recognized as the definitive reference in the field. As usual, our discussion that between Jerry and

myself is both personal and psychological and this time somewhat cosmological. Jerald Trumbule B.S. University of Maryland 1965, M.S. University of Pennsylvania in 1970, has been a neuropsychological researcher, Walter Reed Army Institute of Research, and NASA, University of Maryland and an assistant professor of psychology at the University of Toronto, he says disgusted with the academia, he moved to Denver in 1971, where he founded Sebastian High School a gradeless, experiential learning center, founded the Western States Film Institute with two winners of the student academy awards and in 1980, founded Denver's first computer training center. Now retired and living in obscurity he says, he is a videographer and blogger. You'll find his blog at DenverDirect.tv where he expounds on local politics and pollution. He continues his life-long interest in the workings of the human brain, exploring his own brain in through hypnogogia and REM sleep and hopes some day to upload the contents of his brain directly to the Internet. Now here is our conversation.

Dr. Dave: Well, Jerry Trumbule, welcome back to ShrinkRapRadio.

Trumbule: Yeah, you're certainly welcome. I'm pleased to be back, it's just been a few minutes since we've talked before.

Dr. Dave: Yes, but nobody knows that so. . .

Trumbule: okay . . .

Dr. Dave: (laughs)

Trumbule: I'm sorry, alright.

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Dr. Dave: Let's see, we only announce it at the end of the last show, but yeah, we were having so much fun last time that we just kind of a wry kind of use up all of our time going over that article in the New

Yorker which (he laughs) I won't do that again! But just let me say that if you missed our last conversation, you definitely want to hear previous podcast that I did with Jerry Trumbule here.

Trumbule: Um hm

Dr. Dave: Which we discussed the article, "The Truth Wears Off; There Is Something Wrong with the Scientific Method?" written by Dona Lerner in the New Yorker, December 13, 2010 and you will find that on our website in the shownotes. So Jerry, we're going to continue our conversation. In the previous conversation, which we titled, "The Slippery Nature of Reality" and this will be the slippery nature of reality part two.

Trumbule: Right.

Dr. Dave: And we were talking about sort of various kinds of biases that come into research not just in psychology but other disciplines as well that have lead to something called the Decline Effect but the problems go deeper than that, don't they?

Trumbule: . . . there . . .

Dr. Dave: . . . there is the segue you've been looking for (laughs).

Trumbule: They certainly do, Dr. Dave.

Dr. Dave: (laughs)

Trumbule: The recent work by a number of investigators into, what's now called neurobiology or certainly neuroscience, has, and in physics in general, has led to a very, what I consider very problematic situation; that is to say, the effect of the observer on reality.

Scientists through the ages have decided that they should try to remove their own biases to the extent that they can from the experimental procedures and, as we mentioned before, that led to the double-blind study where neither the subject nor the scientist were aware of which was the pill on which was the placebo and of course that led to the placebo-effect.

Dr. Dave: Yeah, right.

Trumbule: . . . and which is has turned out that the sugar pill was almost as good as the real thing. And maybe that's part of the problem but what really got me excited, was the work of Stuart Hameroff and I just recently discovered this although what I also discovered was that he's been doing this work for the past 20 years.

Dr. Dave: And then we should mention that he's at the University of Arizona, right?

Trumbule: I think that's right. Yeah. And throughout my studies of the brain, the mind and consciousness, I 've always been somewhat leery of making a statement about where consciousness lives. The brain is very compact and is said to contain a 100 billion neurons and that's a lot and then with all the interconnections between neurons, it's said to contain a 100 trillion neural connections and that is certainly a good size computer.

Dr. Dave: Well, somebody, somebody that I recently interviewed had written in his book, and I don't remember which one, that the number of possible connections actually were greater than, I think it was, the number of stars in the known universe.

Trumbule: Yeah, I've heard that statement before; since we don't know the number of stars, it's kind of a nebulous statement, but

anyway, it's huge. But what I've always got hung up on in comparison of the inner life that we all have, with the physical mechanism that we believe houses this inner life. Part of my problem was the transmission of an event from one neuron to the next, that it has to go from an electrical impulse in the neuron, to a chemical release at the synapse which excites another neuron and so on.

Dr. Dave: Right.

Trumbule: And although these are measurable times and there pretty fast, milliseconds, it just didn't seem like what was going on in my head, was somehow above and beyond that, that I just couldn't imagine that that the neurons could, we capable of housing of what I think goes on in my head. And that's why I got very excited when I read about micotubules. If you recall in our day when we studied the neuron when we got down to the actual cell that the stuff on the inside at the I believe it was called the cytoplasm, and then you would see a nucleus and then you would see a mitochondria would be in there for the energy and the rest of the stuff was just kind of colored in.

Dr. Dave: Goo. (laughs)

Trumbule: Goo, yeah, it was the goo ooo and it turns out, that the goo, is another system altogether, a system of microtubules. Now, I don't pretend to be anything other than a amateur observer of and reader in this area but, as I understand it, the microtubules are composed of self-folding proteins. So they kind of wind themselves up in these little tubes and the little tubes have a head and a tail and they actually can pass proteins through them to various effects including electrical effects and that, here is the part that really caught my attention; that they don't rely on synaptic connections to other neurons, they have these little gap connections between the neurons. It's like a window between adjacent neurons and that information can

be passed through this gap to these gaps that are in proximity to each other at the quantum level. And of course the quantum level is where everything changes. Our whole Newtonian physics kind of dissolves away into probabilistic considerations. And maybe some of the listeners are old enough to remember the dual nature of light, when that was a big topic. Light was said to be a wave of energy and yet in some instances, it seemed to operate as a particle. So the question was, is light a particle or a wave? And for those of you who have access to Youtube, I would recommend that you search on "quantum physics for dummies part one". It's actually a cartoon and it very nicely describes the double-slit experiment. And the double-slit experiment has to do with trying to figure out whether light is a particle or a wave. If you have a single slit, and you send particles through it, they pass through, some of them pass through, some of them bounce off, and they show a pattern where they've gone through, kind of looking more or less like the slit with a little bit, you know, of randomness on the edges. If you pass a wave through the single slit, the wave, and it's demonstrated in this cartoon by a water passing through, the wave goes, part of it goes through the slit, and then it's registered on the background as a more of a diffused pattern. But the other thing that happens is that waves reinforce each other and we've all seen in the bathtub or in the ocean, and what you get on the blackboard behind, where they're hitting, is an interference pattern where there is a main bar down the middle and then a gap and then some lesser patterns to the side. And so that was going to be the way that we decided that whether light was a particle or a wave. Well, it turns out that when you put another slit in the same barrier, you come up with some very strange results. The particles, in this case electrons, pass through and seem to line up where they hit into bars and the wave creates an interference pattern as before. But, and here's the astounding part, if they try to observe what's going on at the slit, it changes the results. And this is where we tie into the previous discussion about experimental bias. It turns out in quantum

physics, that the observer is the key and that at the quantum level, an observer looking at a wave, causes what they call a collapse of the wave into a particle. And, when I first learned this, I was going, like wait a minute, that can't be. What is an observer? Is it a human? Is it a camera? Is it a squirrel?

Dr. Dave: (laughs) Right. Which is it?

Trumbule: . . . watching this happen? (laughs) Well, apparently, it is any observation of anything causes the collapse of this quantum state. Now. . .

Dr. Dave: . . . how could they know that, though? How could they; I got hung up on the same place that I think you were just talking about getting hung up. And I think we are talking about the Heisenberg Uncertainty Principle which people have at least heard that . . .

Trumbule: . . . yeah, that where it all started, the idea that you could not measure the speed of an electron or an atomic particle and its position at the same time.

Dr. Dave: Right, right.

Trumbule: If you measure one, you couldn't measure the other. As, kind of like, taking a frame out of a movie; you couldn't measure its speed, you could see where it was, but you couldn't measure its speed with that single frame. But, suddenly, my mind began to boggle because as a kid, I remember having the thought that I was the only real thing in the universe.

Dr. Dave: (laughs)

Trumbule: . . . and that . . .

Dr. Dave: . . . I think that that thought has crossed most of our minds
. . .

Trumbule: . . . I think, I think . . .

Dr. Dave: . . . not that Jerry Trumbule's the only person in the universe.

Trumbule: (laughs)

Dr. Dave: (laughter)

Trumbule: Now you're walking down the street and you see all these other people going by, and then you turn a corner, and as a kid I remember thinking, maybe they are all just robots, . .

Dr. Dave: (laughs)

Trumbule: . . . and they all just stop, . . .

Dr. Dave: . . . right. . .

Trumbule: . . . when I stop looking at them . . .

Dr. Dave: Yeah

Trumbule: . . .and if I turn around quickly, they all start up again.

Dr. Dave: Yeah.

Trumbule: So there is no way to fool them. And so what we are

finding here in quantum physics is that that's kind of more or less true! That the observer has a profound effect on the results. Now, some of these, I have to admit, five years ago, having a little extra time on my hands, I decided to undertake the study of quantum physics. And so I bought a bunch of books and I read, or made an attempt at read some of these books, some of them were way beyond me mathematically but some of them were written for people like me and they describe the quantum entanglement and collapse of the wave and so on and so forth, quantum tunneling and I was going like, I am just not getting this. By the way, I should also add that I sold all these books back on Amazon . . .

Dr. Dave: (laughs)

Trumbule: . . . because they were very popular so, I bought them, I read them, and I sold them again.

Dr. Dave: (laughs)

Trumbule: And it wasn't until I can't even remember the name of the one that, it said you know, if you don't understand this, don't dismay because nobody understands it.

Dr. Dave: Yeah, it's also anti-intuitive.

Trumbule: Exactly. How can something be in two places at once? Well, its a probabilistic field. It's not really, it's kind of everywhere at the same time. Until you actually pin in down, and then that probabilistic field collapses down to a single particle which will appear randomly somewhere in that field you were looking at. And I'm going like, this is just too bizarre.

Dr. Dave: Let me cut in here because there are two topics on the

table and I want to try to separate them a little bit so that we don't go . . .

Trumbule: . . . okay

Dr. Dave: . . . go into both. And one is this uncertainty that you're talking about, this Heisenberg Uncertainty Principle as it manifests itself. The other is the microtubules topic that you started to broach and I know . . .

Trumbule: . . . yes.

Dr. Dave: . . . I know there is some crossover but the exciting piece of the microtubule thing that I'd like to make sure we bring out is because you referred me to a Youtube video by Stuart Hameroff of who I think the video that I saw, he was presenting to the folks at Google, is that right?

Trumbule: Yes.

Dr. Dave: Yeah, and the parts that I could understand, here's what I took away, (laughs), I couldn't follow it all but but the part that really impressed me in as he was talking about microtubules, was that each microtubule; and these are tiny, tiny, tiny, things can hold a byte of information. I think he said they could hold 6 bits of information. And so they're like tiny little computers, if you will, and as you pointed out, that they communicate with one another non-synaptically.

Trumbule: And instantaneously. And that's . . .

Dr. Dave: . . . ah, that's the tie-in to the quantum thing, go ahead.

Trumbule: Exactly. Because what they are proposing is that the

microtubules operate at the quantum level and that they can; there is something, let's see, what do they call it, it's quantum effects generally just one particle but they can operate in unison. And they -- what I took away from other information presented by Hameroff, was that all the microtubules in all of the neurons in your entire body, could communicate with each other instantaneously. And this is one of the, one of the mystifying parts of the quantum explanation; it involves something called quantum entanglement. As I understand it, if you take a set of particles and split them into two and send them in the opposite direction and then you, and it's been described a couple of different ways; if you look at the spin on one of the particles . . .

Dr. Dave: . . . right

Trumbule: . . . the other particle will automatically have the opposite spin.

Dr. Dave: Right. And there's a way evidently so manipulate the spin of the first particle, to reverse it . . .

Trumbule: . . . yeah

Dr. Dave: . . . and then the other one reverses the other way.

Trumbule: Exactly.

Dr. Dave: No matter . .

Trumbule: . . . and . .

Dr. Dave: . . . how far apart they are in the universe . . .

Trumbule: . . . right

Dr. Dave: . . . in the universe, theoretically.

Trumbule: . . . yeah. I think they did one that was 7 miles apart.

Dr. Dave: Yeah.

Trumbule: . . . and it's instantaneous. So all, that kind of breaks the speed of light rule.

Dr. Dave: Oh yeah, faster than the speed of light, yeah.

Trumbule: Nothing can happen faster than the speed of light. Well, here is something the transfer of information apparently happening instantaneously. And my joy was in finding not the answer by any means but at least the capability of the system that resides in our heads, and our bodies, of instantaneous communication at a distance. So that all of these microtubules would be in constant sync and by the way, Hameroff is also an M.D. an anesthesiologist and has studied that aspect of consciousness to the extent that I was thinking, oh boy, this is a system that's big enough and it's seems to be capable of housing consciousness and our inner life.

Dr. Dave: I love the way you said "my joy" "my joy is" and I guess my sense of joy around this is I've been reading a book by Stanislav Grof, M.D., Ph.D. who I will be interviewing, actually it going to be on my Wise Counsel podcast series so I don't know if that will have happened already by the time people hear this discussion or not. But, at any rate, I've been reading his book, "When the Impossible Happens"

Trumbule: Hmm!

Dr. Dave: "Adventures in Non-ordinary Realities".

Trumbule: Wow.

Dr. Dave: And he goes way out there in terms of talking, going from, well he talks about memories from the uterine, from being in the uterus, which I've always been skeptical of, he talks about memories that go back to the moment of conception, then memories that go back to before that, memories of past lives, ESP. And all of that stuff that, and sort of Carl Jung's conceptions of the cellular memory, if you will. . .

Trumbule: Yeah.

Dr. Dave: . . . and the collective unconscious . . .

Trumbule: . . . the archetype, yeah.

Dr. Dave: Yeah. And so all of that has seemed from a scientific point of view, pretty farfetched in terms New..., certainly in terms of any kind of Newtonian paradigm . . .

Trumbule: . . . well, yeah I

Dr. Dave: . . . well

Trumbule: . . . exactly . . .

Dr. Dave: . . . these microtubules though to me, open up the possibility of, well, if they're *that* tiny, then they could live in a gene.

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Trumbule: Yeah.

Dr. Dave: And if could live in a gene, then that means that such things as racial memories, etc, *could* be passed on genetically, and it also opens up the possibility and of course we're being very speculative here, but what you're talking about the entanglement and instant communication that could also open up the possibility for the kinds of ESP experiences that people experience and report.

Trumbule: Exactly. In fact, it's even bigger than that. And I would refer the listeners to paper by Robert Lanza called "The Biocentric Universe Theory - Life Creates Time, Space and the Cosmos Itself". Because what I'm starting to feel excited about, is the fact that at this quantum level, and I know there's a temptation to throw everything down to the quantum level and just kind of mix it all together and say, okay, that's the way it works and . .

Dr. Dave: . . . yeah, yeah.

Trumbule: that must be it. There is also a, once again, Stuart Hameroff has a paper online called, "Is Consciousness Connected to the Fine-structure of the Universe?". And I would recommend that to the listener as well because it sounds like, at the quantum level, we are all one. Ta daaa!

Dr. Dave: (laughs) Back to Buddhism!

Trumbule: There it is.

Dr. Dave: Yeah.

Trumbule: There it is, there it is, the answer. We finally... No, it's not the answer by any means but it looks like a framework if you can accept this mystery of the quantum level. It looks like a framework that would explain so much of what we find mysterious in

all this today. I have a hard time with my feeble brain trying to wrap it around these concepts but when Hameroff, it's just a, I mean, he's a dynamite speaker and he is just so enthusiastic and so knowledgeable that I, and he's got all kinds of Youtube movies and other sources that you can find online.

Dr. Dave: And I should mention I sent him an invitation to be a guest. I've not heard back from him yet.

Trumbule: Well, I certainly hope he accepts because I would love to hear him discuss this once again. He seems to be totally energetic when it comes to speaking about it. But, just the idea that the observer, life, creates time, space, and the cosmos itself. Is this possible? (laughs)

Dr. Dave: (laughs) I know. You sent me the link, I'm now remembering; you sent me a link to something by Lanza.

Trumbule: Yeah, that was it, the paper.

Dr. Dave: Yeah, and I should, one of us should remind me to make sure that I put that link in on the shownotes for this interview.

Trumbule: Yeah, there is just so much; I started to put together a kind of a "linkology", a "linkography" and there was just so much I thought you know, just go to Google and search on Robert Lanza or search on Stuart Hameroff and there's more than you need to get into this. And then it comes down to wow, is this a belief system? Or is this a way to determine the truth? I'm starting to think that the concept of the truth is probably what we have to give up here. (laugh)

Dr. Dave: (laugh) Well, that's sort of yeah, in a way that seems to be one of the implications of what they're saying. Now, I wrestle with this

you know, it terms of being a moderator of discussions here, and trying to get out the word. (laughs)

Trumbule: Uhm hum.

Dr. Dave: . . . about psychological truth, and sort of making decisions about who I'll interview and who I'm not comfortable interviewing because they, for me, they're a little too kooky or far out.

Trumbule: Right, right. Exactly.

Dr. Dave: And you know, how do we, how do you, how do I balance that, I mean, we still and despite what we've said, don't we still have some belief in science and someway of filtering information? How do you come out on that? You know what I'm saying?

Trumbule: Yeah, I do. And I think what it boils down to for me at least, is the understanding that science itself is a belief system. It's nothing more or less than that. And at the quantum level, they always make the argument, well, we know that you can't understand this but every single experimental test that we have ever devised has shown that this is true. That the quantum level exists and this is how it operates. And it has all these freaky things about two places at once, and instantaneous communication, and tunneling, and let's face it, the transistor, the diode which is the basis of the transistor, operates on a quantum principle, quantum tunneling. An electron is on one side of a barrier, and suddenly, it's on the other side. The barrier was impenetrable but it shows up on the other side. So they call that quantum tunneling. And maybe we've come up against the old idea that an Apple 2E computer could not simulate the operation of a Macbook because it's too limited. Maybe our brains will *never* understand this. I hate to say this because it sounds mystical in some way. . .

Dr. Dave: (laughs a bit) Right.

Trumbule: . . . and you know how I feel about that but maybe it's true. Maybe we just, if they keep testing this and the quantum level turns out to be the way they describe it with all these things that we can't rationalize because we only have experience in the Newtonian world, maybe we'll just have to maybe eventually be incorporated into common knowledge, I don't know. But something being in two places at once, Schroeder's cat and all that, it's kind of like, oh no . . .

Dr. Dave: . . . well . . .

Trumbule: . . . what in the world is not formed up of hard, little balls, you know.

Dr. Dave: Yeah.

Trumbule: . . . bouncing off of each other . . .

Dr. Dave: Right. Well, you know, I live here in California where all sorts of ideas abound and I'll reveal my own bias here which is the result of I guess of academic training as well as probably some kind of temperamental things you know of . . .

Trumbule: Sure.

Dr. Dave: . . . wanting to differentiate myself I guess from New Age airheads (laughs)

Trumbule: Yeah.

Dr. Dave: . . . who will . . .

Trumbule: Exactly.

Dr. Dave: . . . you know, who will quote quantum physics as, showing that all things are possible and therefore they can sort of continue to float a basically, a sort of anti-intellectual space of, if you will.

Trumbule: Yeah, I think there's a big danger of that. I feel myself floating in that soup myself right now, actually. But the idea that, oh yeah, you can't understand this, but this is the way it works. And it's so open to that kind of catch-all, oh wow, we don't know how it could possibly work but it must be happening at the quantum level.

Dr. Dave: Yeah.

Trumbule: Down there, anything is possible. There is no such thing as time, and the observer creates the cosmos, oh my god!

Dr. Dave: Yeah, right. Right, help, help. There was, there used to be the metaphor or analogy of reality as a very complicated clock, that was the old . . .

Trumbule: . . . right

Dr. Dave: . . . mechanistic model.

Trumbule: . . . exactly

Dr. Dave: . . . and then the model more recent model has been the computer.

Trumbule: . . . yes

Dr. Dave: . . . and everything has been described in relation to, with reference to the computer.

Trumbule: Um hmm.

Dr. Dave: To what extent is this some kind of new metaphor, maybe?

Trumbule: Well, that's a good question, I think because I occurred to me as well. When we get down to, when we find a new system inside of the neuronal system, are we just reducing it down one level and now we're hypothesizing that these magical things can occur where they don't have to actually, I mean, this tunneling through the gaps in the neurons, instantaneous communication throughout all the neurons in your body at one time. Is that for real? I mean, how do we measure that, how do we get down there with it? Maybe Hameroff will have some answers.

Dr. Dave: Well, Hameroff refers to Dr. Roger Penrose and I haven't read anything about Penrose and I think you have. What does Penrose bring to the soup?

Trumbule: Well, Penrose, as I recall, as, kind of old school neurophysiologist, and it's kind of towards the end of his career when we wrote "The Emperor's New Mind" and he was proposing something like this but he didn't have the physical mechanism and Hameroff brought the microtubules to the argument. Now, I haven't read "The Emperor's New Mind". I'm going to read it but I haven't read it yet. But that was kind of the starting place that got Hameroff interested and then the two of them collaborated and then they came up with this new model. And I find it exciting because it seems capable of housing the mind. It also, by the way, seems capable of housing the spirit and the soul. So I'll go way out limb; it's all down there at the quantum level somehow mixing around. And, by the way, it, in my

mind, once again feeble as it is, it seems to give some credibility to this, to many of the mysteries of life that we have been hammering away at for hundreds of years now, of mother's waking up in the middle of the night knowing that their child is in danger. . .

Dr. Dave: . . . right

Trumbule: . . . telecommunication, teleportation, who knows? It's kind of scary, kind of, because it's, once again in my mind, it's kind of ill-defined and at this time, and that's why I really hope that you can get Hameroff on the show and maybe ask him some critical questions. How are, I don't know he has all the answers; I don't think he believes he does. I think he believes that what he is proposing is a system that's *capable* of doing the kinds of things that we believe that this monster computer that houses our brains could operate. Whereas the neuron didn't have any kind of on/off state, the cubit, as he calls it, one little part of the microtubule does have that. In fact it has off, on, and in between as indeterminate. It has a quantum state where it's neither off nor on. So maybe that's better maybe it's worse, I don't know. I find it to be very exciting . . .

Dr. Dave: Yeah, yeah. Now, one of my correspondents, recent guest Peter B. Todd in Australia has been urging me to interview Karl Prigram which I'm sure is a name that you would recognize. . .

Trumbule: . . . I do

Dr. Dave: . . . and, evidently in his, he's probably a pretty old guy now and . . .

Trumbule: . . . yeah, must be

Dr. Dave: . . . and I'm getting the impression that he has ventured off

into some of these realms of speculation. Do you know anything about his recent writing or work?

Trumbule: No, I don't. I remember the name, but that's all.

Dr. Dave: Yeah, that's about where I am. So . . .

Trumbule: . . . we'll have to do a little more research . .

Dr. Dave: . . . and that to your list.

Trumbule: Yes, I just have.

Dr. Dave: Okay

Trumbule: . . .I just wrote it down, yeah.

Dr. Dave: And then you can tell me what he said. But he was the big name in brain study, right?

Trumbule: Exactly, yeah.

Dr. Dave: And Donald Heb I think also has . .

Trumbule: . . . yep, yeah, I remember that one.

Dr. Dave: And I, he's another classical neuropsychologist . . .

Trumbule: Uhm hmm.

Dr. Dave: And I have the impression that he, too, has got some far out ideas.

Trumbule: Well, yeah. I hate to say this but I've noticed throughout my life that as people get older . .

Dr. Dave: . . . Uhm hmm.

Trumbule: , , , they tend to want to settle on an answer. They've been tossing around all their lifetime to figure out what is the meaning of life, is there an afterlife, is there some form of reincarnation, or how does it work? And as they grow older, they kind of pick one . . .
(laughs)

Dr. Dave: (laughs) Yeah, right.

Trumbule: . . . it's getting a little late in the game so I'll just pick one of these and go with that. And now I want to be Catholic.

Dr. Dave: (laughs)

Trumbule: Call in a priest right now because I think I'm dying so . .

Dr. Dave: (laughs)

Trumbule: And I don't want to fall into that, I don't want to be a; I've always been a seeker and I don't want to pick an answer because it's comfortable now that I'm old.

Dr. Dave: Yeah. I don't know if you'll remember this but I remember when we were young, we were both, we were in college but we were in our adolescence . . .

Trumbule: . . . yeah, yeah

Dr. Dave: . . . and we had this conversation. I think we were calling it the Leap and that you had to have the courage to make the leap. . .

Trumbule: . . . yeah

Dr. Dave: . . . rather . .

Trumbule: . . . exactly right

Dr. Dave: . . . rather than getting settled on a solution. Do you; and I remember you speaking really passionately about that. Do you remember that conversation?

Trumbule: As a matter of fact, I started; I have about 150 pages of a novel called "The Leap"

Dr. Dave: . . . oh

Trumbule: . . . and it stars you and me. (laughs)

Dr. Dave: (laughs) Hey! Amazing.

Trumbule: I still have it. It's handwritten and I still have it; it's all yellow and falling apart and everything but I still have it. You've inspired me to go back and take a look at that.

Dr. Dave: Oh good. Yeah, wow, that would be great. That would be the perfect culmination of our lives.

Trumbule: And then we could just say, oh, just read our book there. It's called The Leap. You'll have to get to it eventually yourself.

Dr. Dave: Right.

Trumbule: . . . boy, we were; it was so much fun. We were very adamant about what we were trying to find out, we were, and I know a lot of people didn't understand our style of conversation because it involved a lot of yelling and jumping up and down and stuff.

Dr. Dave: (laughs)

Trumbule: You remember that?

Dr. Dave: (laughs) I do remember that particularly Rich. Rich, who was from New York City and had a very animated style.

Trumbule: . . . oh yeah

Dr. Dave: . . . and loved debating with you. I've never been that much of a debater but you two would lock horns . . .

Trumbule: . . . yeah in fact I had a informal symposium at my house in Philadelphia in 19, well, let's say a long time ago, when I was in graduate school . . .

Dr. Dave: . . . yeah

Trumbule: . . . on the mind-body problem. And that's is what we are still discussing here . . .

Dr. Dave: . . . yeah

Trumbule: . . . that is the mind-body problem, the phy--, how does the mind, what is the physical substrate of the mind? And maybe microtubules are the answer, I don't know.

Dr. Dave: Well, I remember another one of the, what people will

dismissively call, what do they call, freshman, freshman bull sessions .
..

Trumbule: . . . um hmm, um hmm

Dr. Dave: . . .you know and I remember one in your room and Rich was there and I was there and you were there and I don't know who else, the thing that was being fiercely debated was one versus two, in other words, it was is there, is dualism the only thing possible or can there be unity? And so we were deeply enmeshed in that kind of philosophical struggle.

Trumbule: Wow, we were really smart back then, weren't we?

Dr. Dave: (laughter)

Trumbule: We were fantastic, shining examples of brilliant youth!

Dr. Dave: . . . yeah

Trumbule: . . . I can't believe it!

Dr. Dave: Well, we were really wrestling with without knowing it, we were wrestling with some pretty deep and ancient philosophical questions: psychophilo, spiritual questions that are still with us today.

Trumbule: Yeah. And I think it should be an encouragement to young people. I'm assuming that young people still have these conversations. I'm hoping they do. Because I know they were exciting to us and lead us in all kinds of different directions. Just to give you a simple example: I remember when I was in graduate school, I spent a whole year doing library research trying to find if there was any drug which increased REM sleep. There is no such drug

by the way . . .

Dr. Dave: . . . hmmm, wow.

Trumbule: But all drugs decrease REM sleep because I think there is a very strong link between dreams, consciousness and the kind of stuff we're talking about now with the, at the quantum level.

Dr. Dave: Okay, now that's going to be the segue into Part 3. We will have a future, because that is what we were going to talk about sometime back, was that very topic; some of your more recent inner voyages.

Trumbule: . . .yeah, and in fact that is one of the beautiful things about psychology, the study of the mind, and whatever you want to call it. You don't have to go to a university. You don't have to be enrolled in a program. You're sitting inside of your own little experimental chamber and you can start to observe your *own* behavior; keeping a sleep log, keeping a dream log. you can start to investigate things on your own. Maybe if you have a friend at the same level, you can discuss them. But I would like to encourage all your listeners to not hesitate to enter into this ongoing discussion of the mind and the brain. And in fact, I've just made a note here; in 1956, when I was in the 10th grade, I wrote a paper called, "The Brain, the Nervecell, and Electricity". And that was to be my beginning into this world and its dominated my life, I'll say. Even though I haven't been an academic, it has certainly dominated my thinking life, and would encourage all of the listeners at whatever level you're at, you know. You can start monitoring you're own behavior, you can start seeing what you do. Especially in the world of dreams and how you can enter into your own subconscious and that's the direction I'm heading in and that's what will be discussing in our impromptu third part of this series.

Dr. Dave: Okay, that's a great wrap up and I just want to thank you. This has been so enlivening for me and how wonderful to still have this strong connection over 52 years.

Trumbule: Yeah, I would second that, Dave. There is nobody else like you that I know and somehow we've maintain this bond over the years and we can still have these discussions that physically excite me I mean, I'm ready to go!

Dr. Dave: (laughs) Right!

Trumbule: I'm going to have to run around the block or something!

Dr. Dave: (laughs) okay

Trumbule: So thanks again.

Dr. Dave: Thank you.