ShrinkRapRadio #262, A Door Into the Unconscious, April 22, 2011
Dr. David Van Nuys, Ph.D. "Dr. Dave" interviews Jerry Trumbule

Excerpt: *And if you pursue this on the Google, you'll find that there are all kinds of people that I didn't know about who were purposing that you use the techniques that I am about to discuss, to gain, to fix yourself, to make yourself happier, to achieve new levels of motivation and so on and so forth. And most of these people want to sell you something, they want to sell you a course or some DVD's or CD's and so on. A couple of people have built careers behind this phenomenon but it's free and it's available to everybody so I'm just going to blurt out how to do it and then you can try that yourself.*

Dr. Dave: And of course that was my old friend Jerry Trumbule who clearly is no snake oil salesman but rather is offering for free his own discoveries on opening the mind's eye. In this episode, Jerry and I have yet another one of our wide-ranging conversations, picking up the thread were we left off on Shrink Rap Radio #259. In the beginning of our conversation I mentioned three inspiring documentaries for which you'll find links in the shownotes at ShrinkRapRadio.com. The three films are: "I Am", "Happy" the Movie, and "Genghis Blues". And I should mention that Genghis Blues is currently available on Netflix. Jerry Trumbule received his Bachelor of Science from the University of Maryland, his Master of Science at the University of Pennsylvania and he has been a neuropsychological researcher at Walter Reed Army Institute of Research and NASA and was also at the University of Maryland. He became an assistant professor of psychology at the University of Toronto and later became disgusted with academia and he moved to Denver 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's a videographer and blogger 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 through hynogogia and REM sleep and hopes some day to upload the contents of his brain directly to the Internet. Now. let's listen in on our conversation.

Dr. Dave: Okay, friend Jerry, welcome back.

Trumbule: Hey, good to be back, Dave. How have you been?

Dr. Dave: I've been being good actually . . .

Trumbule: . . . good.

Dr. Dave: . . . and I'm feeling really up and excited because I saw an amazing film last night, and there is a connection synchronistic sort of connection to another amazing film, and in both cases, there is a good chance I'm going to be directing, I'm going to be interviewing the director of each of these

two films and I thought this would be particular interest to you since you, you know, you are a videographer and a film maker, so you've had your feet firmly planted in this world.

Trumbule: Yes, and I think it has a lot to do with dreams. Maybe we can talk about that later.

Dr. Dave: Yeah, yeah, I think it could tie-in. But before I cut you loose on that topic, I wanted to share with you and with the listeners these two must-see films one of which I have only seen myself so far. The one I saw last night is called "I Am" and you can find information about it on their website at www.iamthedoc.com. That's not as in, I am the doctor but more as in, "I Am" the documentary.

Trumbule: Right, right.

Dr. Dave: Yeah, so it's iamthedoc.com.

Trumbule: Um hum.

Dr. Dave: The director's name is Tom Shadyac. So he's directed 3 or 4 films with Jim Carey that were blockbusters and in the process, it made him a millionaire I think many times over. And then he had an epiphany; he had a mountain biking accident in which he not only messed up his knee but also got a concussion and the concussion caused long-term psychological, emotional problems that really created the crisis in his life where he became fairly suicidal. But then that turned out to be the catalyst for a real turnaround in his life and to send him off on a project that he had been thinking about for some time, but he was a little too embarrassed to tell his friends and actually carry it out and bring it to the world. So what that project was, was this film that I saw last night in which it's driven by two questions: what is the problem in the world, generally, what is the problem with human beings and with what's going on in the world, and what is the fix, what is the solution? Those two basic questions. So he conducted interviews with such luminaries as David Suzuki, Noam Chomsky, Howard Zinn, Archbishop Desmond Tutu, Lynn McTaggart, Ray Anderson, John Francis, Coleman Barks, and Marc Ian Barasch; I wasn't familiar with each and every one of those people. The director I'm talking about by the way, his name is Tom Shadyac I think it is, Tom Shadyac. He was at the film last night so I think that sort of adds to my excitement and the director is there and can address the audience and answer questions right after the film. It's just a very, very powerful film. And it definitely relates to what you and I been talking about because what emerges is, what is the problem. The problem is that we think we're separate and there's all this science of the sort that you and I have been talking about and all of this spiritual wisdom that says no, we're not separate, everything is connected, as individuals we're all connected, but we're also connected to the world of nature and into everything, everything to the whole picture but we've built the society and the system; Western culture is built and driven on the notion that we are individuals, that we're separate individuals and that we all need to compete with each other to get to the top. And that's how his life was driven, Tom Shadyac's, until he made this film. He sold off his mansions, he had the Beverly Hills mansion, I think he had more than one mansion, he sold off his private jet, and scaled down his life considerably. So it's just a really, you know, exciting film, inspiring and of course I was gratified to see two of the people that he interviewed in the film are people I have interviewed on Shrink Rap Radio. One is Dean Radin who I interviewed in Shrink Rap Radio #197 on scientific

parapsychology and he had some really good things to say in this film and also Dacher Keltner who I interviewed about positive psychology and whose really been one of the main influences on my thinking along those lines.

Trumble: Um hmm.

Dr. Dave: So somewhat syncronistically, I had been contacted earlier by someone who asked if I would be interested in interviewing the director of a film that's about to come out called "Happy". By the way, you can find clips on YouTube I think of "I Am". You can also find clips on YouTube of the film "Happy". And it turns out that as you know, she's putting me in touch with this director of the film "Happy" who turns out is the guy who directed the film "Genghis Blues".

Trumbule: A ha. Okay, yeah.

Dr. Dave: That's one of my favorite films. Did you ever see that one?

Trumbule: Yeah I did, I think on your recommendation.

Dr. Dave: Yeah, yeah, it's about the I think the it's a blind blues singer in Oakland California who somehow on 78 rpm records, discovered Tuvan throat singing, somewhere in outer Mongolia. . .

Trumbule: . . . right.

Dr. Dave: . . . it's this area where these people live and listening to records he learned to do this complicated kind of vocalization and it's a wonderful story. He ends up going to that region of the world and competing in the contest with Tuvan throat singers . . .

Trumbule: . . . right . . .

Dr. Dave: . . .and emerges as the champ.

Trumbule: Yeah, it's kind of an interesting movie because there is so many disappointments in the journey .

Dr. Dave: That's a good point. There are setbacks . . .

Trumbule: . . . yeah, you're never sure he's actually going to make it you know, and then there's he gets sick, and there is all kinds of as I recall, somebody's relative died, and it was just like, is this actually going to happen? And of course it does happen and he he gets to sing and actually that that movie lead me looking into that Tuvan throat singing. There's quite a few clips on YouTube.

Dr. Dave: Oh really? And people can do it. I've actually . . .

Trumbule: . . . yeah

Dr. Dave: . . . you know . . .

Trumbule: . . .I've tried it. I did. I tried it.

Dr. Dave: Well, I . . .

Trumbule: . . . unsuccessfully but I . . .

Dr. Dave: . . . yeah, I had no idea how to begin to try it. But I went to as you know, a few years back, I went to a didgeridoo camp.

Trumbule: Yeah, yeah same kind of sound, isn't it?

Dr. Dave: Yeah, well there were actually, there was a throat singing class there.

Trumbule: Oh, okay . . .

Dr. Dave: . . .I didn't attend that class and I sort of regret that I didn't do it, I think it would have been fun. And I since discovered that there is a fellow who teaches in the Psyche department part time at Sonoma State who teaches on shamanism and so as part of his whole immersion into the world of shamanic practices, he can do it.

Trumbule: Wow.

Dr. Dave: Yeah.

Trumbule: Cool.

Dr. Dave: Yeah, so very, very interesting. So, at any rate, that director's name; I'm blocking on it at the moment, but the guy who directed that film is directing this film called "Happy" and somebody . . .

Trumbule: . . .oh okay . .

Dr. Dave: . . . contacted me and said, hey, would you be interested in interviewing him?

Trumbule: . . .yeah . .

Dr. Dave: . . I said yes and so that's all in process still.

Trumbule: Well, it sounds like you're branching out into the world of film.

Dr. Dave: . . . yeah or . .

Trumbule: . . . and ah . .

Dr. Dave: . . .or it's coming my way which is exciting and wonderful. But to add synchronicity upon synchronicity, it turns out that the director of "Genghis Blues" and the forthcoming film, "Happy", is an executive producer of the film "I Am" that I saw last night.

Trumbull: Wow.

Dr. Dave: Yeah.

Trumbule: A small world.

Dr. Dave: Really, really.

Trumbule: (laughs)

Dr. Dave: So I, I just really wanted to let you know that you've got to put these 2 films on your to do list and somehow somehow see them.

Trumbule: . . . yeah . . .

Dr. Dave: . . . and I imagine eventually they'll be available. They're both going to be in general release but I don't know how widely circulated they'll get. So hopefully, eventually they'll end up either on Netflix or people will be able to buy a reasonably priced copy and that was something that Tom Shadyac committed to last night. He said that that was going to happen.

Trumbule: Good. Excellent.

Dr. Dave: But he said before that, he had a kind of commitment to the theater's to do the theater circuit first.

Trumbule: Sure. Yeah.

Dr. Dave: And I should let people know that the next filming is going to be in Los Angeles and I think from there he said he was going to New York. So . . .

Trumbule: . . .ah hah . . .

Dr. Dave: . . . any listeners in those two cities should keep their eye out for the film "I Am".

Trumbule: Well, as you know, my life-long interest has been involving and brain to brain communication and often when I took up film, which is back in 1971, people said, well that's totally different from what you were doing with your electrodes and animal's brains and stuff and actually I saw the connection was; there were couple of connections. The main one was that the transfer of emotion from one human to another human being. When you are in a movie theater, you're staring at a blank screen, it's actually blank most of the time. And as you know, the pull-down mechanism

shows one still at a time.

Dr. Dave: . . . right . . .

Trumbule: . . . at a certain framrate and 16 mm was 24 frames per second. To our visual set-up, it looks like motion and some people can see a little flickering and if you slow it down of course, most people can see, what is that called, the flicker fusion rate? . . .

Dr. Dave: . . .yeah, yeah, that's it . . .

Trumbule: . . .or something. And so I was thinking okay, there is a whole bunch of people sitting in a dark room staring at a screen that is mostly blank, and then at certain points in that film, they all start crying, almost all the people start getting tears in their eyes.

Dr. Dave: Yeah, yeah.

Trumbule: So some or they laugh, they shout or whatever emotional response is engendered by this illusion. And in a sense, it's a direct communication between the brain of the film maker and the brain of the viewer.

Dr. Dave: Okay, let me cut in here because my head is exploding . . .

Trumbule: (laughs)

Dr. Dave: . . .with reactions . . .

Trumbule: (still laughing)

Dr. Dave: (laughs)

Trumbule: Okay, okay.

Dr. Dave: . . . to what you're saying. One of it reminds me of Plato's metaphor of the cave, you know, where the people sitting . . .

Trumbule: . . . yeah . .

Dr. Dave: . . . in darkness; their seeing these shadows and they think that's reality.

Trumbule: Right.

Dr. Dave: And so it's really a direct, directly parallel to that parable or whatever you would call it.

Trumbule: Yeah.

Dr. Dave: Because when we are looking at the, if we didn't know it was a movie, (laughs) we would think that we were looking at something real. Now the other direction my head is exploding in, is that that whole topic was one of the central ones in the film, "I Am" last night . . .

Trumbule: Ah!

Dr. Dave: . . . and so they talked a lot about the heart and how the heart act; we think of the brain as the seat of all the important action. . .

Trumbule: . . . right . .

Dr. Dave: . . . but it turns out that the heart and the vagal nervous system . . .

Trumbule: . . . right . . .

Dr. Dave: . . . and I just got a book; I'm going to be interviewing, you might know this guy's name, last name is Porgus I think P O R G E S?

Trumbule: . . . no . .

Dr. Dave: . . . does that ring a bell?

Trumbule: . . .no. . .

Dr. Dave: Well, he's the guy who's done huge research on the vagal nervous system,. I haven't read the book yet . . .

Trumbule: . . . ah ha . .

Dr. Dave: . . . so I don't want to get too far ahead of myself. But evidently the heart according to the film, radiates measurable electrical magnetic fields outside the body.

Trumbule: That's what hugging is all about.

Dr. Dave: Oh yeah, hugging was very big in the film, too. And so, they showed, there's a group called The Heart Math, I don't know if you've ever heard of them, I've been aware of them and I probably should interview somebody from there . . .

Trumbule: . . .uh huh . .

Dr. Dave: . . . and they have a guy who's their chief scientist. So one of the people that he interviews, is the chief scientist at Heart Math and they do this demo where they hook up two electrodes to yogurt . . .

Trumbule: . . . ah ha . .

Dr. Dave: . . . and then they show the director, Tom Shadyac, they show him very emotional images designed to illicit huge emotion.

Trumbule: Right.

Dr. Dave: And you see the yogurt reacting. They've hooked up a microvolt meter or something like that to the . .

Trumbule: . . .oh, so he's, he sending signals into the yogurt from his . . .

Dr. Dave: . . . yeah . .

Trumbule: . . .body in some way.

Dr. Dave: Yes, yeah, right. And they put in a little note you know, for the purposes of the film, this isn't the whole scientific protocol.

Trumbule: Right. Well, does the yogurt start crying or what?

Dr. Dave: (laughs)

Trumbule: (he laughs also) No, I'm just kidding.

Dr. Dave: Yeah. So I just wanted to share that because you said that emotional responses communicate to other people and evidently not just to other people, but into the environment, to plants and to trees etc. So, go ahead, you were on a roll . . .

Trumbule: Well, no I was talking about the communication part. The other interesting parallel not clear what to make of it, is the fact that until recently, movies were generally about 90 minutes long.

Dr. Dave: Right.

Trumbule: An hour and a half, that was considered to be the standard length for a film. And it's interesting to note that the dream cycle in humans is about 90 minutes long.

Dr. Dave: Ha, I never thought of that, you're right, but I never made that connection.

Trumbule: Yeah, that ongoing cycle that actually runs 24 hours a day but when it gets to, when the sun goes down, that cycle sends you off into sleep. In fact that's one of the reasons or one of the ways that I got into this; previously I had done a lot of research into involving rats and putting platinum iridium electrodes into their little brains and stimulating them and reading EEG's from them. And I would inevitably see the rat sleep cycle which of course is opposite from us since they get up at night and wander around at night and sleep most of the day because there was an interesting effect. Now, let me back up a little bit. I was trying to study dreams as a physiological substrate of dreaming. I

didn't have a clue as to what it might be. But after I kind of gave up on electrical brain stimulation because the questions of how that behavior was motivated or so overwhelming people started to shun that kind of study because nobody knew what the heck was going on that seemed to make electrical brain stimulation so rewarding but in fact, all the measures of rewards strait showed that it wasn't rewarding at all so I was, it was too confusing, I was looking around for something else to do. And I said one third of your life is spent sleeping, so maybe something important is going on there. Dreaming was an important part of what I was interested in. I also picked up incidental facts along the way like, for example, LSD collects in the retina and in the pineal gland. And I thought, well, yeah, I can understand that retinal part but what's it doing in the pineal gland? Well, as listeners probably know, the pineal gland is often thought to be the third eye and indeed in reptiles and birds, it is very close to the surface, the underside of the skull. And it could be demonstrated that light actually penetrates the bird skull and directly affects the pineal gland.

Dr. Dave: And there's some speculation that it also, that it's true in our case, isn't there?

Trumbule: Well, not in, not the skull penetration part. Ours is too far down. It's, if you put your fingers in your ears and drew a line between them, and then did the same thing from the bridge of your nose to the back, it's practically in the very center of the mass of the brain.

Dr. Dave: Can I take my fingers out of my ears and nose now?

Trumbule: (laughs) Right.

Dr. Dave: (laughs) Okay.

Trumbule: Exactly. And of course, that was very problematic in my research. One of the things I did was to ablate the pineal gland in rats which means to burn it out. And it also happens to, because it's a part of the endocrine system, it happens to be, have a great vascular network around it for receiving and transporting chemicals. So that made it very problematic anyway, enough of that.

Dr. Dave: Well, this part of your journey is actually new to me, this, the way you moved away from the reward centers of the brain . . .

Trumbule: . . . right . .

Dr. Dave: . . .thinking about sleep and dreaming, I didn't know that, that piece of background.

Trumbule: Yeah, and I kind of stumbled into it. I could easily see these states on the EEG records that were coming out of my machine. One of the first things I noticed was that when rats were falling asleep, they seem to start off with a short dream. And that's contrary to what we were taught was that in humans, for example, start off by going into slow wave sleep and then in the first cycle, it like 80 minutes of slow wave and then at the very end, 10 minutes of rapid eye movement sleep, and then a bit of awakening. Now, I point this out because a lot of people don't think they got a good night's sleep if they can remember waking up in the night. In fact, after, since I've been observing my own behavior in this regard for some time, what I notice is I wake up consciously between every 90 minute

segment. And I actually look at the clock; they tell you're not suppose it have a clock next to your bed. Well, I always look at the clock to see which cycle I'm in and are going in, what's the next one going to be.

Dr. Dave: Hmm.

Trumbule: Generally speaking, in my experience, you need 5 of these hour and a half cycles per night. And that would be 7 1/2 hours of sleep. Now, sometimes I'll wake up after 4 of these cycles, and it'll be 5 o'clock in the morning, 5:30, something like that, and I just don't feel like going back to sleep for the 5th one. But then I noticed during the day that that's somewhat detrimental to my, I just don't feel like I'm as sharp as I would have been.

Dr. Dave: Right.

Trumbule: And of course we also know that lack of or deprivation of rapid eye movement sleep has some bad consequences. It leads to hallucinations and they used to say that it would kill you eventually but I couldn't find any evidence that people died from lack of sleep, it may be true. So these were the kind of interests I had and I thought, well, film making is a kind of a short circuit way to see if you can manipulate people's brains using this illusion which we know isn't anything but a flickering light on the screen.

Dr. Dave: Let me take you back before you go on because you started to say something about the pineal gland and that LSD accumulated there and that . .

Trumbule: . . . yeah . .

Dr. Dave: . . . and it got through bird's skulls . .

Trumbule: . . . yeah . .

Dr. Dave: . . . I wonder if you completely completed that thread or not.

Trumbule: Well, not really. There's a lot, there's tons more to be said but I did want to mention, check my notes here. The interview you did with Rubin Naiman . . .

Dr. Dave: . . . yes . .

Trumbule: . . . number 256 . .

Dr. Dave: . . .yeah . .

Trumbule: . . . that was really exciting to me because he and I were on the same page with respect to things like melatonin and the pineal gland and he, he pointed out that in humans, and I didn't know this until I heard him say this, there's a special circuit for blue light and apparently that special circuit serves the same function as the proximity to the skull serves in birds. In other words, that blue light

sensitivity and it has its own circuitry from the eye into the brain, serves a similar function in terms of keeping us in synchrony with the environment.

Dr. Dave: You know and he mentioned in response to I think a question that I asked about, well, could you give some kind of special light . . .

Trumbule: . . . yeah . .

Dr. Dave: . . . because I think he said that the blue light was of the computer screen might keep one awake.

Trumbule: Yes, exactly.

Dr. Dave: . . . and so I meant to go out and investigate the light that he said you could purchase. Did you . .

Trumbule: . . .yeah . .

Dr. Dave: . . . I didn't do it. Did you?

Trumbule: I did, I did. It's called "No Blue" and I don't know if you can buy 'em at your local shop but they're online. It's "No Blue" is the, thank the Google.

Dr. Dave: Have you experimented with that yourself and . .

Trumbule: No, I haven't done, haven't done anything in that regard. (sounds of running water) I'm getting a glass of water.

Dr. Dave: I'm glad you told me that that's what it is! (laughs)

Trumbule: (laughs)

Dr. Dave: It could be mistaken.

Trumbule: Okay. That's lighter.

Dr. Dave: (more laughs)

Trumbule: Anyway, so that was one source of connection there and I wanted, before I actually get started here, I wanted to say a couple of things about sleep in general. I noticed that the Huffington Post which is everybody knows, a very popular site for news and articles of all kinds, over the past 3 or 4 months, they've really been honking on the benefits of sleep and how important sleep is and how you can get to sleep better, how you can stay asleep, and so on and so forth. Because I think it's already been demonstrated that most of us are sleep deprived. And I been, in my own life, I began to see a great correlation between sleep deprivation and not only mental alertness, but general health.

And we all know that when we get sick, one of the first things we do is that we start sleeping a lot, you know.

Dr. Dave: Yeah.

Trumbule: So I think there is a direct connection between sleep and the immune system, and dreams, and health of the mental condition of the person.

Dr. Dave: I certainly concur with that and probably some of us are more sensitive in that way than others because I know that in college where most of the people I knew would pull all-nighters to cram. I quickly learned that I couldn't do that, that if I pulled an all-nighter, I was guaranteed that I would get sick, I would get a cold.

Trumbule: Yeah, exactly

Dr. Dave: . . . affect my immune system.

Trumbule: Yeah. Yeah, it's almost like a guarantee like you said. I've discovered that for sure. And I've also seen that we are fools when it comes to regulating our sleep. When I was a kid, my mother always made us go to bed at a certain time. Now, in the summer, it was still light out . . .

Dr. Dave: . . right . .

Trumbule: . . . and we were constantly complaining 'now we can't go to sleep when it's so', well, there is something to be said about that too because it is, light does have a big effect on whether you can sleep properly or not. But . .

Dr. Dave: . . . I'll insert my own little anecdote here because I remember that, you know, I grew up in kind of a ghetto area and so the sort of non-middle class parents didn't care how late their kids stayed up, so I would have to go to bed and I could hear kids outside and running around and playing and laughing, why can't I do that?

Trumbule: Yeah, it was torture. I say the exact same thing. I remember looking out the window and seeing other kids playing in the twilight, having a lot of fun running around, and we had to go. But at any rate, as usual, my mother was right. Another thing I've learned is that a standard bedtime is very important.

Dr. Dave: Um hmm.

Trumbule: The way it works out for me: 10:30 is bedtime.

Dr. Dave: Yep.

Trumbule: Because that works out to be with 5 full cycles to get me to wake up at 6 o'clock in the morning which is about exactly right.

Dr. Dave: Yeah.

Trumbule: So, and before I leave that topic, the 5th cycle is the feature film. Because each of these cycles has more REM sleep and less slow wave sleep, by the time you get to the last one, it's almost all dreaming. Now, a lot of people say, oh, I don't dream or I don't remember my dreams, or some people swear they don't dream at all but of course that's not true. We all do dream. There's been some question about what were rapid eye movement is actually a good measurement of dreaming and I think it's probably the best one we have. Amazingly that it wasn't even discovered until the '60's when a graduate student who was studying sleep happened to be watching his little baby and noticed that his eyes were flipping around.

Dr. Dave: Yeah. Something human beings have observed since time immemorial.

Trumbule: Yeah, I know . . .

Dr. Dave: . . . I never connected that.

Trumbule: Apparently not. At any rate, so I was interested in trying to control dreams; is there some way we could get our hands on dreaming and that's what led to studying, trying to find a drug that interfered with dreams; I'm sorry, that enhanced dreams because all drugs seem to interfere with dreams including sleeping pills, by the way and I think people should be aware that in general, the sleep they get under the influence of the most sleeping medication, is mostly slow wave sleep. It actually depresses REM sleep. And that's why you feel kind of groggy or weird when you wake up I think.

Dr. Dave: Uh hmm.

Trumbule: It's not true, healthy sleep which has I think has to include dreaming. Okay, so I was looking around, how do I get my hands on dreaming, how can I push it around and do what scientists do - form a hypothesis and then do an experiment. The whole thing with the pineal gland didn't work out because of the physical limitations but I didn't lose my interest in sleep. I continued to play around with various techniques and I was mostly just observation and I also wanted to mention that observation is the main duty of the scientist. Experimentation is what comes later but it's observation that is really key to trying to understand or at least to formulate questions. And often I think that is forgotten in today's scientific world, that we need to look at something, we might not want to call it reality anymore but we have to be observers. So I was observing and one of the things I noticed was that when you close your eyes, you generally stop paying attention to the input that's coming into your brain from your eyeballs. I should also point out that the retina is actually part of the brain. If you look at how it develops; stalks come out from the brain and then the eyes develop on the ends of them. And so, it's actually a little piece of the brain in that it's extended out there with a optical system on it to enable us to get these photons and the rods and the cones are incredibly sensitive , they can the rods can respond to as little as one photon which is totally amazing.

Dr. Dave: Yeah.

Trumbule: At any rate, so there you are with your eyes closed, you're fully alert and you're paying attention. Now once again you're guest, Dr. Nayman, had an interesting take on that. His as I recall, his position was that, you are actually conscious, unconscious and asleep all at the same time to varying degrees. And, let's say, while you 're awake and conscious you might start daydreaming. So you might have a little dreaming coming into that. You might if you are sitting in a boring lecture, you might also start to fall asleep so you might have a little sleep come into that. And I liked his idea his conceptualization of attention is a spotlight that can shine on any of these three areas.

Dr. Dave: Um hmm.

Trumbule: And during our waking day, we hopefully spend most of the time with our attention spotlight on our conscious input from our conscious brains. I have to go back a little bit and mention your heart brain because I'm a big believer in that theory as well. I think actually we have 5 brains. I don't want to call them brains because that implies that they're in the cranium but 3 of them are in the cranium, the neocortex and paleocortex and then the brainstem area, snake brain or whatever you want to call it. The other two are the nexus that you described around the heart and then there is another one around the stomach and the total number of neurons in those two systems which are not in the skull, is greater than all the neurons in the spinal column for example.

Dr. Dave: Humm. Now is that the solar plexus, that last one?

Trumbule: I don't know exactly; I think it's that as well as other nerves that extend beyond that, I don't know exactly the physical definition of it. But the reason I mention it is because we all know these things; I have a gut feeling, right?

Dr. Dave: Right, right.

Trumbule: And also I have a "broken heart".

Dr. Dave: Um humm.

Trumbule: If you've ever had a broken heart, you know that your heart actually hurts. It physically hurts around your heart. It's not just some mental concept boo hoo, I lost my girlfriend or whatever.

Dr. Dave: Um hum.

Trumbule: And also grieving and other things I think indicate that we are getting neural input from our stomachs and from our hearts into the system that includes the 3 parts that are in our skull. But I digress.

Dr. Dave: (laughs) For the first time ever! (laughs)

Trumbule: No, but I had to go back and pick that one up.

Dr. Dave: Yeah and to just add to the digression of course I am thinking a bit about chakras here, maybe there are more than 5.

Trumbule: Well, I think all these things are describing the same thing. . .

Dr. Dave: Um hum.

Trumbule: . . . in different ways . . .

Dr. Dave: . . . right . . .

Trumbule: . . . different points of view but as a; now my main guy is Stuart Hammeroff .

Dr. Dave: Right, we've you've made a sally to him in our last conversation.

Trumbule: Yeah, I wanted to mention him again because I've gone back now, I've tried to read and watch everything he's done. There's a lot of YouTube movies; if you go to QuantumConcious.org, you'll see that he has that kind of a mishmash of references all of which are clickable and some of them are powerpoint presentations that you have to download, others are little YouTube videos that he's done. But he definitely builds up a more complete understanding than you or I are going to be able to relay here. So I really would recommend that listeners go to QuantumConcious.org to hear Hammeroff's complete story because when he gives a talk especially in the question and answer period, people really attack him for this point of view. And just to review very briefly, the point of view is that the cytoskeleton which is comprised of microtubles inside of the neuron, are according to his view, quantum computers that can communicate with each other through other than synaptic means through these little gap areas and therefore can operate as a quantum system that's all in coherence and that's a particular word in understanding all this quantum stuff is the coherence idea and the collapse of this coherence because what, if you follow him all the way through, what you find is he's saying, consciousness lives in the microtubles. It has two states: a wave state where it's unknown, we get superimposition, things can be in two places at once, we get entanglement, we get all those quantum effects until the actual moment of observation, then the whole thing collapses and it's reduced to a particle by the collapse. And his contention is that this change in state which he calls Ork or by the way a very unwieldy name, but "orchestrated objective reduction". In other words, the brain is orchestrating this, the objective part is the observer, and the reduction is in the coherence. So it builds and collapses a number of times per second. He relates this to the gamma waves that we've measured with EEGs. These generally run about 30 to 60 cycles per second or hertz as they call it. That corresponds with functional MRI studies which show that certain areas of the brain are operating at these frequencies during certain experiences. Conscious attention you'll get these gamma waves. So he contends that consciousness is not an analog feature of our existence that's some how emerges from having a bunch of neurons but it's actually a pulsating build-up and collapse of quantum effects and we're conscious at the peak of each of these, right before the collapse, the collapse itself is the moment of consciousness. But we're only conscious one moment out of every second or shall we say, 60 moments out of every second. And that actually fits in with our personal experience to some extent. We know we have this critical flicker fusion rate so we can measure that. We see that kinds of fades away I think it's about 15 and above it becomes continuous to us. And we also learn from

nature that if you study the prey predator relationship, what you find is that the predator always has a faster rate than the prey. The predator can see faster than the prey. And that's what establishes that relationship. We also know from subjective experience that if we're in a accident or something really emotionally wrenching, times seems to slow down., right?

Dr. Dave: Yeah.

Trumbule: It seems to go in slow motion; you can see the every frame, oklook, well, it's probably I'm guessing true that that gamma wave rate speeds up during those times and then when we review it, it just like speeding up the film and a camera and then when you look at it in normal speed, it looks like slow motion. I think that explains or at least points us in a direction there. It also points it has to do with I think with aging because people say, well the older you get, the faster time goes, you know.

Dr. Dave: Yeah.

Trumbule: I think it's because there consciousness rate is slowing down. I don't know if there is any evidence for that but if your flicker rate is getting slower and slower, when you look at it normal it looks like you're, it actually looks like you're speeding up doesn't it? That didn't work out the way I thought it would.

Dr. Dave: (laughs) You know the metaphor that I've always used is that it's like water draining from a bathtub; at first when you pull the plug, you have to look very carefully, is it draining or isn't it draining? It's not draining that fast but as it gets down to the bottom, that whirlpool develops and it seems to spin faster and faster till slppp! it's gone. . .

Trumbule: . . . yeah. . .

Dr. Dave: . . . and that's to me very much parallels my experience of the sense of time as we age and that's certainly something that I've thought about. Another thing that what you said sends triggers for me and by the way, kudos for being able to wrap your mind around all of that complexity that you just took us through and being able to summarize it as succinctly as you did.

Trumbule: I left out most of it. (laughs a little)

Dr. Dave: (laughs) Color me impressed!

Trumbule: Yeah, I tell you, Hammeroff if you study him, it's all there. I mean, I even printed out one of these 50 page articles of his and the man is brilliant and he's put it all together and based his work on the work of Roger Penrose I wanted to mention that. Last time we spoke, his name came up and I said, oh yeah, I know who he is. Well, I didn't know who he is. I had some other guy in mind and Roger Penrose wrote the seminal 'The Emperor's New Mind' and book and that got Hammeroff and Penrose consulting together on this whole thing. But now . . .

Dr. Dave: . . . wait wait, before you go on . . .

Trumbule: . . . okay yeah . . .

Dr. Dave: . . . I just wanted to observe that; I've always felt kind of dismissive of New Age types who talk about raising their vibration rate. That as you become more and more enlightened, or clear, whatever, you're raising your vibration rate but in a sense it sounds like you said something that sounds sort of like it's going in that direction.

Trumbule: I think in fact it's already been demonstrated. I'm not positive of this but I know they've done is functional MRIs on advanced meditators. They have found changes. Now, I'm not sure whether they found that the gamma wave rate increases in those people. But I'm guessing that is what they found. But I have to go back and double check that.

Dr. Dave: Yeah.

Trumbule: Yeah, but it does seem that yes, you could train yourself to do this and perhaps that's what leads to enlightenment. Or at least it leads to more conscious nanoseconds per second. He also points out that other organisms have this same objective reduction and so it would appear that they have consciousness at a certain rate. And when you get way down there, the rate is really slow. In fact he says, even an electron will spontaneously go through this change of state without an observer but it is only once every few million years. So it might be said that even simple electron has that one brief flash of consciousness every couple of million years. That's pretty slow but it also might lead us to comprehend that other objects not necessarily animate objects have a similar collapse rate which might be once a month for a tree. Or maybe even more often for a tree but you see what I'm saying. . .

Dr. Dave: Yeah.

Trumbule: . . . so the this concept that the whole universe is made of consciousness at all levels. . .

Dr. Dave: Ah.

Trumbule: . . . so that yes indeed a mountain has a kind of consciousness and so does a rock and so does a bug or a dog or a human. It's just a function of how often have them.

Dr. Dave: Yeah, you know I should mention that Hammeroff organizes a international conference on consciousness. I looked into it and was thinking maybe going thinking, well maybe I could get some good interviews, maybe I might not be able to understand at least some of the people what they're saying. It's in Stockholm and I've forgotten what month it . . .

Trumbule: . . .yeah, it's coming up in May I think or something like that, isn't it?

Dr. Dave: Yeah, something like that and I was going to pursue it and then somebody made a casual remark to me that Stockholm is very expensive and that sort of caused me to . . .

Trumbule: . . . yeah . .

Dr. Dave: . . . idea . . .

Trumbule: . . . yeah and my take is that these days transporting my body to a place to get information is not a very efficient way to do it. I'll just wait until it's over and watch the YouTube movie. I won't be able to participate, but that's okay.

Dr. Dave: Yeah. Now let me just, I want to be mindful of the time.

Trumbule: Yes, me too cause I got to get in my shtick here.

Dr. Dave: Well, okay, and I want you to get in your 'shtick' but I'm wondering if we're going to need yet another session because where I thought we were going to go, was a lot into you're own inner experiences and . .

Trumbule: . . .that's my shtick . .

Dr. Dave: . . .yeah . . .

Trumbule: . . . that's what I want to get into.

Dr. Dave: . . . and . . .

Trumbule: . . . still got time, Dave, we still got time.

Dr. Dave: Really? You don't think it deserves a whole session of its own?

Trumbule: No.

Dr. Dave: Okay. Go.

Trumbule: Okay. Now here's the thing; I want to start off with a statement that I am not a psychologist or a medical doctor, I am not making any recommendations that people do this for anything other than fun.

Dr. Dave: You're just an actor who plays . . .

Trumbule: Yeah.

Dr. Dave: . . . who plays ....colleges.

Trumbule: . . . some might think and if you pursue this on the Google, you'll find that there are all kinds of people but that I didn't know about who are proposing that the use the techniques that I'm about to discuss to gain, to fix yourself, to make yourself happier, to achieve new levels of motivation, so on and so forth. And most of these people want to sell you something, they want to sell you a

course or some DVD's or CD's and so on. A couple of people built careers behind this phenomenon but it's free and it's available to everybody so I going to blurt out how to do it and then you can try it out yourself. Now, I also want to mention before I blurt it out, that one friend that I explained all this to, said she was anxious to try it and she did try it and it frightened her. Ah, I said, what happened? She said I started into a brain state of some kind and I become possessed of a fear that I would not be able to come back. It was just so overwhelming and so powerful that it frightened me and I immediately opened my eyes and said, I am not going to do that anymore.

Dr. Dave: (laughs) Right.

Trumbule: And I have had a couple of scary experiences too that I hope I can get to. But here is the deal: when you are not pressed for time, when you are not overwhelmingly tired, try sitting in a comfortable chair or recliner with the lights out, paying attention to what's coming into your eyes when your eyelids are closed. Some people say well, yeah, I did that I looked and I didn't see anything.

Dr. Dave: Right.

Trumbule: It was just black. It was all black in there. And I said, well, yeah, that's the way it starts out. Ah, just keep looking and that's the hard part. Once you have learned to focus your attention on this, it turns out to be pretty easy. But trying to stay focused with your eyes closed, and your monkey brain is going off in all directions, is very difficult. So you gotta just sit there and you just gotta wait. Now, what happens to me and that's all I can talk about, is I start to notice that this black cave, it's not really black. It's kind of swirling around, it's got some, well, it's got some phosphenes in it. And that's a name that applied to the light that you see when you have your eyes closed.

Dr. Dave: I sometimes see like paisley-type patterns. . .

Trumbule: Yeah, exactly, paisley, sometimes you'll see a little bright spot, sometimes it's a swirling of kind of iridescence in a way. It seems to have some depth but there's no depth cues so you can't tell for sure. Okay, so now let's say you've moved on to the stage where you are now seeing some swirling. This part is just like staring at the clouds. As a kid, maybe you laid on your back and looked at the clouds and you could see a dog and you can see a horse and a face or whatever. Well, the same thing; you're staring into this swirling void and you start to see things that look like things. Well, attend to those things and try to force them to become what they look like. If you're successful, you will actually see a face and if it's a particular person you were thinking about, you'll see that person's face. Now, the weird thing is they may not be looking at you. They may be looking off into the distance somewhere else; you might be seeing them from an angle above them, looking down, or down low, and if your relaxed enough I think is important and if you're also paying close attention, you can start to make those, what shall we call them, imaginary figures talk and act. You can get them to take off on their own so that you are not telling them what to say, or what to do, they might, I remember one in particular; I had an experience where I was, when I fastened in on it was a scene with three people in it and I was up about 10 feet above them looking down and they were talking and I could overhear their conversation. They were talking about stuff that didn't interest me.

Dr. Dave: (laughs)

Trumbule: And I was going like, this is boring . .

Dr. Dave: (still laughs)

Trumbule: . . .so . .

Dr. Dave: (more laughs)

Trumbule: . . . I guess it's because I am a director, I said, okay, cut! And then I said, look guys, start talking about something like this and just like actors, they said, oh, okay, and then I shut up and they took off again and it was much more interesting this time. I've also been very successful at calling up deceased friends and relatives. Now, this sounds like a little screwy but your sitting in there, looking into the cave, you see a face, oh, it looks something like your mother, okay. Hey, mom, and then suddenly it shapes up and it is it's your mother. And she's there and she might be talking to you or talking to somebody else, not saying anything. Sometimes an image will swirl and disappear. Sometimes they burst into a crystal clarity that is almost scary. It's like you're actually seeing them, it's not it doesn't look like a dream state you know, it's not fuzzy, it's sharp and detailed. And this brings me to another a little sidetrack here. We all know something called our mind's eye you know, when they say, picture it in your mind's eye and you may close your eyes and you may see a car or whatever you are trying to (unintelligible). Sometimes when I'm looking into the cave, into this swirling cave, an entire scene will pop into existence. I think these are two separate phenomenon. I think the entire scene is coming from my mind's eye and I think the swirling images are coming from my retina. The neural circuitry that gets the photon into your eye and then all the way through the optic nerve and so on to the back of the brain where the visual cortex is located. It actually branches out in a lot of different directions and it goes at different speeds and Hammeroff talks about this quite a bit. The initial for example, movement even at the corner of your eye, will instantly trigger a reflex and it seems instantaneous whereas comprehension of a face, might take a few milliseconds longer. So there's different brain areas that are feeding into this system and I figure if the system is closed down and its not getting any input, what's to keep some of those other areas from feeding into the system as well? So I think there's two separate movie screens up there; one is your retina and the other one's your mind's eye. Now . . .

Dr. Dave: . . . tell us, it's the mind's eye that is seeing these movies then?

Trumbule: No, I think they're separate. You can, the mind's eye will show you a movie in fact what happens to me is it's fun looking into the void and I suddenly get a whole entire composed scene, I've learned to stop and look at that scene in great detail because I'm totally flabbergasted; it's complete. The other day I was looking for my swirling images and a scene popped in; it was under a giant oak tree, a little girl was playing on a blanket that had been spread on the ground and the design on the blanket-- little checks with a little embroidery-- it was so complete; every blade of grass was represented. It wasn't something that came out of the swirl.

Dr. Dave: Now to me, this is astounding. Now, would the scene, is that what you're calling the

mind's eye . . .

Trumbule: . . . yeah . .

Dr. Dave: . . .and the swirling is the retinal, I get that.

Trumbule: Right, right.

Dr. Dave: Okay.

Trumbule: Now, the swirling, go you were going to ask a question?

Dr. Dave: Well, I've I guess I'm wondering what value or application, I might be getting too far ahead but I'm just wondering.

Trumbule: Here's another thing: when you first look into the void, and you might want to write down these experiences so you can keep track over time, it's not always the same. It's quite different. For example, if you've had a couple of drinks, when you close your eyes, you'll start seeing fireworks, mostly in black and white if my experience is anything. And I mean just flashing, going every which direction, fireworks, boom, boom, boom, much more difficult to get a fix on any kind of imaginary image that you might want to see. Recently I was ill, I had a kind of a flu-like symptom, didn't we all.

Dr. Dave: . . .yeah. . .

Trumbule: . . . and I was running a fever. And that was the first time I had ever tried exploring while I had a fever and I was astounded to see I mean this sounds too weird to be believed but there was a little square box right in the middle of my cave, it's suspended there in space, very well defined and it kind of looked like shrink rap logo . . .

Dr. Dave: (laughs)

Trumbule: . . . (he laughs) no, it did . . .

Dr. Dave: . . . of course, it's at the bottom of it all . .

Trumbule: . . . it had squares within a square and they were different colors so it that regard it was somewhat similar. But it didn't change, there was no swirling it was just like there and I thought, okay, let's not too exciting so I went back to do something else. Hours later I went back and looked again and it was the same box. And I thought, well, god, this is a little sign that comes up to show when I'm sick. Also I now believe that if we could externally tap into this retinal show it would tell us more than we could even imagine about our current homeostatic state; if you're agitated when you look into the void, you're going to see agitated patterns that's pretty straight forward. But the density, the speed, all these things I'm convinced are a reflection of your current state with respect to REM sleep, with respect to your immune system and who knows, your unconscious. Now. . .

Dr. Dave: . . . yeah, I have to think that the pictures that you're seeing are somehow, you know, either they are pictures of other entities, some people would go that direction and say, oh, well, you think internal but really it's another layer of reality, these beings exist in some other plane.

Trumbule: Oh, I hadn't thought of that.

Dr. Dave: So. it's either that and then you'd be off in the direction of maybe spiritism or some other direction or it's reflective stuff of your unconscious, your deep unconscious and so that raises issues of well, from the chemotherapeutic view, what might you learn about yourself that would be useful . . .

Trumbule: . . . exactly . .

Dr. Dave: . . . or from an artistic point of view, how could you transmute this, bring it out, to turn it into art?

Trumbule: Exactly. In fact, some of these things look like artwork when you're looking at them. I had one in which I have to relate. I was looking in the void and suddenly there was a infinite plane in the void. And it, I could, it seemed to have a grid on it so I could tell it was actually diminishing in infinity. And I was below the plane, I was kind of like holding onto the edge of the plane with my hands and then I thought, well, I have to get up here so I climbed up on the plane and then I noticed for the first time, that there was a cross, a giant cross near me and on the plane and Jesus was hanging on the cross and somehow I knew my job was go up the ladder and get his body and bring it down.

Dr. Dave: Hmmm.

Trumbule: And I thought, oh god, that (unintelligible) no one else was around and yet somehow I knew I had to climb up there so I did. I tried to take his body down and not to get too graphic, but it fell apart. And that was the whole experience.

Dr. Dave: So yeah its interesting, the detail and that it's not just an image but it's a whole scene involving actions over time.

Trumbule: Yeah, because in this last 90 minute feature film, you get an entire movie to create. Now, if you're just sitting there awake and looking intentionally into this area, I think you're viewing the same area that dreams come from . . .

Dr. Dave: . . . okay . . .

Trumbule: . . . who knows, if that's correct. But the unconscious is just bubbling up there believe me. And maybe it's happening at a quantum level. See that's the one thing I haven't done, I haven't made a natural progression from Hammeroff's work and the what is the conscious and what is the unconscious to this stuff I'm talking about now looking around inside of your the back of your eyelids. But I want to tell a few more anecdotes about this state. I find it to be a huge amount of fun. It's in fact, I looked up a Wikipedia of course has the answer to everything, this is also called 'The Prisoner's

Cinema". Now, what does that tell you? Well, if you are a prisoner you got nothing but time on your hands and your sitting there with eyes closed, now you can watch your own movies.

Dr. Dave: Huh.

Trumbule: And this is true of all of us we don't have to be prisoners it's just that we don't, most of us don't have much time. But at any rate, dreams and waking life okay, just recently I was working on a big video project and I couldn't find a particular piece of tape. I had about 20 different hour long tapes that it could have been on. So I thought, alright I have to get systematic and I started making a list and I started going through all the tapes. I went through every single tape and I couldn't find it. Now I didn't look at every minute of every tape. The segment I was looking for was about 20 minutes long so I was kind of jumping through the tapes and then I thought you know, I could have missed it, it could have been on there, maybe I jumped 25 minutes and I missed it. So I was very disgruntled and I went to sleep that night, it's been five or six hours working on this and during the last dream in the morning, the answer came to me it was the answer was, you're way too close to this, you're looking at the same tapes over and over again, back off, take a look from the other side of the room what do you see, oh, you see other tapes that you're not even looking in. The tape you're looking for is in those other tapes. As soon as I woke up I got up and I put that into action and I said, oh, I betcha I must have accidentally put it back in with the unused tapes. The second tape I looked at, there it was.

Dr. Dave: Wow. You know Jerry, I think we're running long and I . .

Trumbule: . . .oh no!

Dr. Dave: . . .yes and I do think that there is more, much more for us to talk about around this. So let's leave people hanging here, let's have it be a cliffhanger and . . .

Trumbule: . . .okay . .

Dr. Dave: . . . we'll come back and we'll talk more.

Trumbule: You're the boss, Dave.

Dr. Dave: Okay, yeah, I like that.

Trumbule: (laughs) Or shall I say Dr. Dave?

Dr. Dave: (laughs)

Trumbule: It's all in your mind.

Dr. Dave: Well, you've just given us a great illustration of that so thanks Jerry and you know, I'll probably squeeze in another three episodes between . .

Trumbule: . . .sure . .

Dr. Dave: . . . and the next time and we do it but we will do it!

Trumbule: Okay, Dave thanks.

Dr. Dave: Thank you.