Shrink Rap Radio #249, October 23, 2010, "Buddha's Brain: The Neuroscience of Happiness, Love, and Wisdom"
Dr. David Van Nuys, Ph.D. aka "Dr. Dave" interviews Dr. Rick Hanson

Excerpt: *Very succinctly, three fundamental facts about the brain are number one: as the brain changes, the mind changes. Number two: as the mind changes, the brain changes. In other words, the flows of personal experience leave lasting residues behind for better or worse. This means therefore, that there is also a third fact which is that you can use your mind skillfully to change your brain, to change your mind for the better.*

Introduction: That was the voice of my guest Dr. Rick Hanson discussing the brain as it relates to meditation. Rick Hanson is a neuropsychologist and founder of the Wellspring Institute for Neuroscience and Contemplative Wisdom. A summa cum laude graduate of UCLA, he teaches at universities and meditation centers in Europe, Australia, and North America. His work has been featured on the BBC, and in Consumer Reports Health, US News and World Report, and other major magazines. Dr. Hanson's most recent book is "Buddha's Brain: the Practical Neuroscience of Happiness, Love, and Wisdom" which is being published in 11 languages. An authority on self-directed neuroplasticity, he edits the Wise Brain Bulletin, has a weekly e-newsletter, "Just One Thing", and his "Your Wise Brain" blog is on Huffington Post, Psychology Today, and other major websites. He has several audio programs with Sounds True and his first book was, "Mother Nature: A Guide to Health in Body, Mind, and Intimate Relationships". Now here is the interview.

Dr. Dave: Dr. Rick Hanson, welcome to Shrink Rap Radio.

Hanson: Thank you, it's a great pleasure to be here.

Dr. Dave: Well, I've been loving your book, "Buddha's Brain" and I think it's a real tour de force. And I've been very interested in the patch you've been working in which is the intersection of all this exciting new information on the brain, positive psychology, and meditation. And you're both a neuropsychologist and a Buddhist mediator. Which came first?

Hanson: (laughs)

Dr. Dave: (laughs)

Hanson: (laughs) That's a great question.

Dr. Dave: I'm glad I'm off to such a good start.

Hanson: Yeah, really, that really took me in a deep way. Oh, let's see, I, so, in Esalen in '57 and I encountered meditation and Buddhism and Eastern philosophy practice in 1974 so that's about 35 years ago. I was a young, pup 21, last quarter at UCLA; had 21 units of independent study and I decided for

reasons that still perplex me, to just dive in, to considering something that I never engaged before, this whole area of Eastern philosophy and religion. And as soon as I read some of the classics like, Aldous Huxley's "Perennial Philosophy", "The Three Pillars of Zen" and . . .

Dr. Dave: **. . .** oh yes.

Hanson: **"**Zen Mind, Beginners Mind". .

Dr. Dave: . . .right.

Hanson: . . .the book on the Buddha's "Knowing Who You Are", Ram Das', "Be Here Now". A number of things like that ...

Dr. Dave: . . .oh yeah . .

Hanson: . . .it immediately rang true to me. That everything is connected to everything else, everything changes, and if you resist those two facts, you suffer and create harms for yourself and others. And on the other hand, if you live increasingly in harmony with those two fundamental truths, then increasingly you live a life of happiness and benefit for yourself and others. And so, that was really the beginning of the process for me and long preceded neuropsychology. Although I will say in my mid-twenties, I became increasingly interested in the brain, information theory, information processing, and the relationship really between the mind and the brain altogether. But I didn't know enough then and I don't think frankly science knew enough then for that consideration to be very productive in terms of practical tools which is what my book's mostly about, as you know, practical methods in daily life when the oatmeal starts to fly. And so, it really took, I'd say about 20 years until about 19-, the mid '90's maybe 15 years ago when the science began to mature enough and my own understanding and grounding really in Buddhism which is where why I returned to really about 15 or 20 years ago after journeys into other spiritual traditions. At, the two ripened enough and grown enough that the intersection between them was fruitful. And no coincidence my own personal journey is that I think a lot of this experience, the personal is the political, and vice versa, right. So my personal journey paralleled major changes in society in which as you well know, organizations like the Mind and Life Institute, Time magazine with a picture of a Buddhist monk with EEG electrodes to his shaven head on its cover, a growing intersection of contemplative practice and neuroscience or contemplative neuroscience broadly, it's really come together. And so, that's been my journey I guess in a nutshell, right. I will say that to wrap up, that above and beyond, what to be a benefit for other people that are interested in, I got to tell you Dave, it's been enormously personally useful both in my own meditation practice, to have some growing basic sense of what's happening in my brain, while different things are happening in my mind and how to use my mind and increasingly to nudge my brain in a good direction. Above and beyond that, it's really been helpful for me in this busy, modern life whether it's dealing with family, or as Jean-Paul Sartre said a long time ago, hell is other people, right. (Laughs)

Dr. Dave: (laughs) Right.

Hanson: Or dealing with computer madness or (unintelligible) that will or will not work. Or the daily firehouse we are on the receiving end of media and emails, tasks and stuff like that. You know,

learning about how my brain works and coming increasingly to home, feeling more and more at peace and at home in a peaceful place in my own brain has been personally very meaningful and important for me.

Dr. Dave: Right. In Buddhism they talk about being a householder and that's really the place where the rubber meets the road . . .

Hanson: Yes.

Dr. Dave: . . . as you were saying. And I love the way that your book integrates the knowledge that has emerged and this explosion of information about the brain and how well it integrates it with what's goes on in meditation and there have been so many good books that have come out recently on these topics and I have had the privilege of interviewing a number of the movers and shakers and it would have been hard to imagine another good book, another good book that would actually be deserving of being out there as a fresh take on all of this. But I have to say that your book; and we probably should note that you have a co-author, a Richard Mendius and I guess the two of you collaborated somehow on producing this book but I think it's really a remarkable achievement. So take us through the, you know, there must be another major touchstone which was actually getting the education of the psychologist; where and how did you do that?

Hanson: Oh, well, there what a long strange trip it's been, right? So I ended up in college in 1969 to 1974 and that was really, I would say, at the point with the human potential movement as well as the counterculture really began to be a rising tide. And then, in my twenties, I was very engaged in creating and leading all kinds of really wonderful personal growth workshops that did integrate in many ways psychology and spiritual practice with the aim towards upper reaches of human functioning. So that was my own background. I think of it a little bit like a guy who was a rocker. You know, I had a garage band and I played bars and clubs (laughs), in my twenties and then in my thirties, I thought, I really need some classical training. So I went to Julliard, which is to say I went to the right institute, which is a really well known and long-standing institute that trains clinical psychologists in Berkeley, California. It was quite psychoanalytic in its orientation so I got good, classical training which I really appreciated, the power of good, classical training. So that was where I went to graduate school and one of the things that I got interested in at the same time that I was in graduate school was, what happens to couples and in particular, what happens to women when children arrive. So because our children arrived, literally our son was born during the first month that I was in grad school at the right institute. And so, I ended writing a book for Penguin which came out in 2002 called, "Mother Nurture" which is about the long-term health and mental and relational and physical health of a mother. Not just during the post-postpartum period, the first 3 to 6 months after the baby is born and so it's really interesting that that subject which is so important and also is the subject in which there is substantial research that really talks about the impact of long-term stress and depletion on a subset of women particularly more vulnerable ones as well as the ones who have the least resources and support in such a way I think leads to a legitimate depleted mother syndrome and so forth. It's really interesting that now withstanding the fact that everyone recognizes that parenting while being the most wonderful rewarding thing a person most people will ever do, is also, taken as a whole, the most stressful and depleting thing a person will ever do. All that said, it's startling how little attention is actually given to the marathon of motherhood and how to run that long marathon in a way that doesn't

leave you running on empty and helps keep your own cup running over if you will, so that you can offer, you have more to offer your family. So anyway, that was a very interesting for me and I engaged that for probably about 10 years in a very serious way. I wrote a lot about it. If people are interested, they can go to the first website I did, nuturemom.com. They can also get to a lot of material at my own website, which is rickhanson.net. But anyway, that was a big push for me in the '90's. And then I would say in the "aughts" and from the millenium on in the twenty-first century, at that point I shifted over and got much more interested in neuropsychology and in particular, kind of applied evolutionary neuropsychology.

Dr. Dave: Well I think your story should give inspiration to some of my older listeners. I hear from people who have already had a career or two and then they catch fire about psychology or some of the, you know, some of these topics and they are wondering, is it too late and of course, it's not too late. Let's talk a bit about the brain. When I was in graduate school, back when dinosaurs roamed the earth. .

Hanson: Yes.

Dr. Dave: . . . I remember taking a course in what then was called, Physiological Psychology and its been a long time since then but my recollection was that we memorize the names of lots of structures in the brain that not a lot was known about their functioning. And with the advent of FMRIs that's really changed in the last 20 years or so. And in your book, "Buddha's Brain", and also in the talk you gave at Google, which I found on YouTube, you start off with some of the mind-blowing and, no pun intended or perhaps it is intended on some level, mind-blowing facts about our amazing brains. Maybe you can review some of those for us here about the size, activities, speed, connectivity, and complexity of our brain.

Hanson: Yeah, with pleasure. I mean, every time I reflect on that and I reflect on it really many, many, dozens, and dozens, maybe hundreds of times, I'm all, I still anew have a sense of awe and gratitude and responsibility . . .

Dr. Dave: **. . . yes**.

Hanson: . . .what we do with this amazing organ. So some of the key facts about it the technical specs if you will. It's about 3 pounds of tofu-like tissue. It's 4 1/2- 5 cups of volume altogether inside our skull. But that material contains about 1.1 trillion cells altogether, a hundred billion of which are neurons; the other trillion cells are very important, they're called glial cells generally and they perform important metabolic and support functions including wrapping myelin which is insulation and a kind of fatty tissue like saran wrap . . .

Dr. Dave: . . . right.

Hanson: **. . .** sheets of saran wrap around a long fibers called axons that connect individual neurons to each other and the wiring and circuitry if you will, of the brain altogether and the nervous system altogether. So those support cells have very important functions including, as science is increasingly discovering, some important information processing functions, not just metabolic

functions. But where the action mainly is for sure in terms of the mind, are definitely those neurons. So a hundred billion of them typically making about five thousand connections with other neurons leading to five hundred trillion synapses or so. And through those synapses, which are little connections between individual neurons, course signals so neurons fire on the average about 5 to 50 times a second. And a lot of that firing is noise. It's the changes in the firing rate up or down that can base a signal. In other words, that's informative. For example, that someone is approaching you or that you really need to get something done for work today or that the light has changed from yellow to red, that signals those are information. And that's what I mean by mind. Most of which is to say the information flowing through the nervous system. Well, in the space it takes for a single breath, let's say; probably about a quadrillion signals moves through your skull. If you think about 500 trillion synapses with neurons firing 5 to 50 times a second, even some of that firing can be noisy, there's still a lot of signaling occurring so a quadrillion; think about that: a thousand trillion or a million billion signals moving through your head every few seconds. Like wow, all right?

Dr. Dave: Yeah, like who counted? (Laughs)

Hanson: Yeah, exactly.

Dr. Dave: (laughs)

Hanson: . . . but these are ballparks but they're good, close approximations. You know, a lot of life is on the back of an envelope.

Dr. Dave: (laughs)

Hanson: And a lot of the important numbers are on the back of an envelope. As they said in graduate school, if you need statistics, to see if something's significant, it probably isn't very. You know . . .

Dr. Dave: (laughs) that’s a good quote. I like that one.

Hanson: Yeah, so that's the brain. And the thing you get about it, is that this object we're describing, this three pounds of tapioca pudding between the ears, is doing what is what is happening right now, in other words, the sensations in a person's tush sitting in a chair or the sounds coming into their ears, or the meanings of those sounds moving to their own space of awareness. I mean, all that absent a theoretical, hypothetical, transcendental, x-factor, all that must be at bottom the operation of the nervous system. So fundamentally, absent a hypothetical, transcendental x-factor, the mind is what the nervous system does. Now, in terms of causality, it's an important point here, it's much as the brain constructs a mind, the mind constructs the brain. In other words, most of the detail of the structuring of the brain is the experience dependent. In other words, it is shaped by the flows of life, both beginning in utero, at the point of the fetus, for example, it is in its third trimester, its brain is mature enough to learn from experience. For example, the amygdala which is the alarm bell of the brain, is mature enough, it's pretty much fully developed by the eighth month of pregnancy so that the fetus in principle, can begin to associate various stimuli with a fear response. So learning can begin, in other words, learning-based on experience can began even in utero certainly by the point of birth, and as well, it

continues. You know, new synapses are forming throughout the entire lifespan; they start forming during pregnancy and they continue up to the last breath and actually sense oxygen is still present in the brain, there is still neural activity for several minutes after the heart stops beating after we take our last breath. I like to think that even as the lights slowly begin to go out at the mansion of the mind after a person passes away, even then synapses are forming, learning is occurring, even in those few minutes. So, anyway, the brain's amazing and so the takeaway here; I see it as three fundamental facts about the mind and the brain. First fact is that as the brain changes, the mind changes. In other words, for better or for worse. I mean for better let's say that you have a thicker insula; that's the part of the brain that does both introspection and self-awareness, it also does empathy for the emotions, the feelings of others. So as the brain changes, in terms of building synaptic structures and gaining new capillaries infusions, of blood flows bringing oxygen and glucose to busy regions. So as the insula gets thicker, a person becomes more capable of both self-awareness, tuning into their body and their own deep feelings as well as empathy for the feelings of others. On the other hand, if the brain changes for worse, the mind changes for worse as in something like a concussion, or shortages in key neuro-transmitters like seratonin which is very involved as you know, in regulating mood, the hippocampus shrinks due to chronic experiences of stress which is associated with diminished ability to form new memories particularly of context or visual or spatial memories. So there the brain changes for worse, the mind changes for worse. The second fact is that as the mind changes, the brain changes in the ways I was just describing what is called experienced-dependent neuroplasticity. In other words, the flows of information, the flows of mind through the brain sculpted and leave lasting traces behind. For example, London taxicab drivers have a thicker hippocampus, the part of the brain I just mentioned that does visual, spatial memory; at the end of their training, in London when they have to memorize the spaghetti snarls of streets, than they have at the beginning of their training. Or in more esoteric ways, people who have a long-term mindfulness meditation practice, have thicker neuro-tissues in both the regions of the brain that control attention which makes sense because when you're meditating, you're really involved in training attention and also in the insula which I just mentioned a moment ago, because of course, they're tuning into their body a lot. In other words, if you stimulate a region of the brain that does a certain function, you will strengthen it. Which then takes me to the third fact: the first one is, as the brain changes, the mind changes, the second fact, the mind changes, the brain changes, that means there are four; the third fact, you can use the mind to change the brain to change the mind for the better. And that puts incredible power in the hands of people at a time when so many of us feel quite buffeted, quite pushed around by major social forces the economy, the political climate, Al-Quaida, the world recession, whatever, at a time when so much is kind of pushing us around, it's fantastic to feel that there is a internal locus of control; that there is an increasing efficacy in being able to use our minds skillfully to change our brain and therefore our minds for the better. And that's for me extremely exciting and that's what I tried to write about in my book as a kind of operating manual for exactly how to do that combined with a toolbox for doing that. And these days I got to say, that without being I don't know pie-in-the-sky kind of guy, I'm actually quite hopeful. That as a growing critical mass hopefully of people in the world becoming increasingly skillful with this caveman brain, cavewomen brain that's currently armed with nuclear weapons, as we become more skillful in managing our own brain, we can help tip our planet away from the cliff that it's racing headlong toward.

Dr. Dave: Yeah, wow. Now, I like to be able to pull out of a little audio quote so I'd like you to say in a sentence, that starts with the phrase, "three fundamental facts about the brain are" and to

outline those three just all in one sentence if you would.

Hanson: Sure. Very succinctly, three fundamental facts about the brain are: number 1, as the brain changes, the mind changes. Number 2: as the mind changes, the brain changes. In other words, the flows of personal experience leave lasting residues behind for better or worse. This means therefore, that there is also a third fact, which is that you can use your mind skillfully to change your brain, to change your mind for the better.

Dr. Dave: Right, thank you for that. Now you talked about transcendental factor x and so there is the question of whether there is a transcendental dimension that we call quote mind. And in the book you say that this is a question that science can't address but that you believe there is something transcendental about mind. If I'm not being too personal, what is it that's led you to your personal conviction on this score?

Hanson: It is really interesting. I always try to finesse this question . . .

Dr. Dave: (laughs)

Hanson: . . .and everyone always tries to get at it because of course it's the big question. It is said, Dave that science; there are three fundamental questions that remain. One is, what is caused the big bang? Two, what is the fundamental theory that integrates quantum mechanics and general relativity? And three how is consciousness happen, right?

Dr. Dave: Right.

Hanson: Who knows? It could be that at bottom the answer to all three of the questions is the same thing. So first off, out of respect, as soon as you grapple with a question of what is mind, I think it's important to appreciate the longstanding philosophical and religious efforts to grapple with that question and to not simply duck it but to actually honor it and face it and to figure out what to do about it. For me my strategy was to face the question squarely, acknowledge that it's really important, in other words, is the mind produced by the meat alone, right? That's the sort of no hypothesis, in other words, that materiality alone somehow in ways that we don't understand that somehow produces the mind by analogy for example, by the time of Copernicus in the late 1400's, there was what 500 plus years ago. But 500 plus years ago, educated people understood that the earth went around the sun. They appreciated that that was a fact that God was not involved basically, you didn't need God, you did not need to resort to a divine intervention to appreciate the fact that the earth moved around the sun but no one knew how it did it. No one knew what kept the earth going around the sun instead of shooting off into orbit you know what I mean, or began to leave the solar system in the first place.

Dr. Dave: Right.

Hanson: It took 300 years for Newton to come along with the laws of gravity and a bit of first level explanation. And another 200 hundred years for Einstein to come along with the theory of how mass works space-time. And so that is what keeps the balls of the planets, as if were, continuing twirling around this gravity realm of the sun. So, a long story short, I think in science, it is understood

that the default view in science is that somehow that meat makes the mind, right, even though we don't know how. All right, maybe that's true. But just because there, is a saying goes, absence of evidence is not evidence of absence. Just because there is no evidence of divine intervention in the construction of mind, does not prove that there is no such divine intervention if you will. This is an important point. So that said, my own personal both experience and understanding of things, is that the way I think of it, is that if we look closely at the actual nature of the moment of now, right, it's really is quite remarkable. I mean, now is infinitely thin, in terms of time, right?

Dr. Dave: Yep.

Hanson: It is always there. Whatever was in now an instant ago is no longer here. It's no longer in reality. And what's not yet in now, does not have any existence, right? It really is quite remarkable. Right under our nose is the most remarkable fact of all, which is to say the nature of now. Now, no pun intended, if you look closely at the nature of now, you can see that the nature of now is that it's emergent, okay, it's obviously very transient and that what is emergent arises interdependently. But just before, if you imagine now is like a tiny, little band that has duration. So there is the leading edge of now and the trailing edge of now, right? As things disappear behind us and things emerge in front of us, at the emergent edge of now, there is actually a lot of possibility both at the quantum level because quantum particles before they congeal, they their fraught with possibility. And at the emergent edge of now in terms of neuro-assemblies, beginning to cohere into stable patterns that can form our mind which takes about 10 to 50 milliseconds, thousandths of a second for a real pattern to emerge. I think of these as eddies, eddies in the stream, right. So just before, the eddy, if you will of quantum particles coalesces into a clear pattern. And also just before an eddy, a coalition of neural synapses congeals into a coherent pattern. Just before that happens, there is actually a lot of unconditioned there in the glutas term. That's where the unconditioned lives. It has, it's not conditioned in the sense of developing a fixed form. And that unconditioned space if you think of it, in now, is eternal because it's always there. It's always eternally possible. And so for me, that is the nature of things. I haven't had to resort to God to describe that, I mean what I'm saying a quantum physicist would agree with, a neuroscientist would agree with. This is actually the way it is, this is the nature of the emergent edge of now in which very interestingly, there is a complete isomorphism, which means essentially that there is a complete matching of the emergent edge of materiality and the emergent edge of mind. As neuron-assemblies cohere, and into a coherent thought, if you will, right. Well, at that emergent edge of now, which remarkably is the same whether for materiality or mind, my own take is that's where God lives. That God is a possibility fundamentally and God is woven into that emergent edge. My own personal opinion and I am not offering this as a scientist or psychologist or a Buddhist teacher, my own personal opinion is that that God is profoundly mysterious, beyond human ken fundamentally, I tend not to think in terms of God as the omniscient, omnipotent personality that's imbedded in Abrahamic traditions of Judaism, Christianity, and Islam. I think of God more in the Vedanta kind of sense as if you will, woven into the nature of things. But for me, when I think deeply about the remarkableness that there is something rather than nothing you know what I mean, that the universe is here at all or that the fundamental laws and constants that are woven into the fabric of the universe that enable it to exist altogether or for example, how many atoms bigger than helium which are obviously preconditioned for life? When I think about the remarkableness of all that, to me the notion that they are actually is some mysterious, conscious, benign x-factor woven into everything doesn't sound that remarkable anymore.

Dr. Dave: (laughs) Wow! (Laughs) What a trip you just took us on!

Hanson: (laughs) that's okay; you've really taken me into the deep end of the pool.

Dr. Dave: Yeah, really you took us into the deep end of the pool. I was here thinking, my god, what if I become enlightened in this moment and I totally loose it and can't conduct an interview anymore. .

Hanson: (laughs)

Dr. Dave: (laughing)

Hanson: Enlightened beings are very functional the ones that have been ...I'm not enlightened yet though. Deep down I think our deep nature is always already enlightened . . .

Dr. Dave: Yeah. Boy, okay, coming back up a couple of levels, (more laughter)

Hanson: . . . up periscope!

Dr. Dave: You say your brain changes your; let's see here, that's not the question I'm trying to get to. There's been an explosion of interest in what's called the plasticity of our brain. And you point out that we've known about this plasticity for a hundred years. If that's the case, what's all the renewed excitement about it?

Hanson: Great question. Well, I admit it really this side of enlightenment I have a little bit of, I've watched psychology, I'm old enough now to have seen all kinds of, looking for a less pejorative word than fads, but I've seen all kinds of passions come and go, that's a better word. We had Freud then we had Jung then we had Reich then we had the behaviorists with Watts and Skinner, then we had the rebellion in that in the humanistic psychology of Maslow and Rogers and others, then we had the cognitive revolution in psychology, and then we had kind of the medicalization of the mind with the advent of anti-depressants and psychotropic meds and so forth, and then we had process psychology, then we had, now we have mindfulness coming in. . .

Dr. Dave: Yeah.

Hanson: . . . right. And left right left and left right. And in all that, it is striking to me and ironic that the field particularly clinical psychology that really has a painstaking interest in the impact of the personal history on people. It's so ahistorical when it is considering its own backyard, right? For example, positive psychology is not a new invention. I mean, that's what Maslow and Rogers and others were up to 50 years ago.

Dr. Dave: Exactly.

Hanson: Yeah. Or you think about the real emphasis now in the body and non-verbal processes in all kinds of psychology, the somatic psychologies. Well, sorry, that's what Wilhelm Reich was into

80 years ago. You know, bioenergetics 50 years ago. It's all wine in new bottles. I tend to be kind of, I try to be careful and intellectually honest about when I'm going to be repackaging in a hopefully useful way familiar material and when are we talking about something genuinely new? So with all this passion about neuro-plasticity and, oh my gosh, oh my gosh, the truth is, it has been understood for a long, long, long, long time that somehow the brain had to change in some ways for there to be any kind of new learning. Whether it's learning to ride a bike or how to do long division or remembering what happened something that was important for you that happened 20 years ago. The brain's got to change. The news to go to your question, is in the details of how and that's where it's very exciting because people are increasingly appreciating the ways that the brain changes its structure. For example, I'll just mention some main ways. One is that busy regions get more blood. You know, it's a little bit like a country hamlet that only has one or two dirt roads going to it wherever, whereas a busy metropolis has got all kinds of freeways and super highways coming into and out of it bringing supplies. Well, the same thing happens in the brain. Second, there are changes in the expression of genes that's called epigenetics based on mental activity. For example, people who routinely practice relaxation have improved the expression of genes that controls the stress response. In other words, little strips of atoms inside the larger molecule of DNA are unleashed if you will, to help people manage stress better. Like, wow, mental activities somehow gets down at the level of these strips of atoms inside a larger molecule which is still unseeable with the very best modern technology. Third, in the famous saying, that you know I'm sure, from the work of the Canadian psychologist Donald Hebb neurons that fire together, wire together. I swear I'm going to do a rap song about that some day but my wife says, honey we pay you not to sing.

Dr. Dave: (laughs)

Hanson: (laughs) Neurons that fire together, wire together. That means that repeated patterns for better or worse, leave lasting residues behind. So I think one of the keys from all this is motivation. In other words, is to appreciate that one's experience really, really, matters not just for its impact for moment to moment, but for the lasting residues it leaves behind. And this has made me personally much more careful, honestly, about the themes I allow my mind to dwell upon including in the background of consciousness, the background of awareness. If you think of the field of awareness like a stage in a theater what is under the spotlight is bright, and illuminated, that's what in the field of focal attention though we can still discern what is also on the stage, it's just a little more shadowy and just the same thing in awareness. So like right now people hopefully under the field of focal attention, are paying attention to this conversation and the meaning of the words and so forth. But in the background of awareness they're seeing sights and staring around or taking up sensations. Well, in the background of the mind think of it in a simulator, the little mini- movies that are playing. On the one hand some of them are like, I've been cheated, I've been mistreated, when will I be loved, right? On the other hand, a different kind of mini-movie is, let it be, let it be, let it be, you can see why people like to sing. But anyway, the point is that neurons that fire together, wire together even in the simulator, even in the background of awareness. So I've become more attentive to what I let my, what I let hang out in the field of awareness. The traditional saying in Buddhism is that the mind takes the shape of what it rests upon for better or worse. So if we rest upon themes of resentment, of regret, self-criticism, hopelessness, despair, limitation, and all the rest of that, guess what, neurons that fire together, wire together. The brain will gradually take that structure that promotes depression, pessimism, anxiety, shame, low self-worth. On the other hand, if we routinely attend to the areas

where we actually do have efficacy where we really, literally are, a hammer rather a nail. If we attend to the good facts, facts not make believe, not positive thinking, but the facts that are good in our world and in ourselves and allow ourselves to feel grateful as a result. If we also stay with those good facts and do what I call taking in the good which I have a whole chapter on in my book, and dwell on those positive experiences so we gradually stitch those resources into the fabric of the brain and therefore the self, if we do those things if we use our minds in those ways, we will gradually change our brain for the better and therefore make a better life.

Dr. Dave: This is sort of where neuroscience and contemplative traditions and cognitive therapy all seem to flow together.

Hanson: That's right. I think part of it, what's powerful is to take away a handful of key points. On key point is that what's in the field of awareness really does leave lasting residues in the brain. As neurons fire together, they wire together outside the field of awareness to be sure. But what's in the field of awareness and in a particular what's under the focal spotlight of attention, is particularly turbocharged in terms of neurostructure. I think of attention as a combination spotlight and vacuum cleaner; it illuminates what it rests upon and sucks it into the brain, right? Another key take away is the importance of really registering positive experiences. The brain is like Velcro for negative experiences unfortunately but only Teflon for positive ones because we've evolved a negativity bias to stay alive; in the Serengeti when life was really, really harsh and it was much more important to avoid sticks than it was to get carrots because if you failed to get a carrot today, you would have a chance to get a carrot tomorrow, if you failed to avoid a stick today, whap! no more carrots forever so therefore, it's very important half a dozen times a day, to really take 10, 20, 30 seconds in a row and savor legitimate and positive experiences. That's the important point. Another important point is appreciating the pernicious impacts of chronic stress. Stress didn't really matter back in the Serengeti when everybody was dead by their 35th birthday but if people want to live long and well, my Dad's 91 1/2 and he's got a new lady friend, alright, 91 is the new 71 . . .

Dr. Dave: **. . .** uh hunh

Hanson: . . . 61 God help us. So the point is we want to live long and well and stress particularly chronic mild low-grade stress has pernicious effects on the body and on the mind. That again is another important take away. And then the last one; I'll just finish up on this point, is that it's what's called in neuropsychology now the social brain theory. It really appreciates how profoundly social we are as animals and how much love broadly defined has driven the evolution of the brain over the last 50 million years of mammalian and primate especially primate evolution and especially in the last 5 million years, of hominid, early human, and modern human evolution. Love has driven the evolution of the brain so it's really important to appreciate the ways in which what happens in the relational field really, really, matters in terms of neurostructure and the importance of turning to relational resources both those that are outside us here and now, as well as those that have been internalized inside us based upon experiences with people over time and to turn to those resources and to use those to draw on those resources to help buttress us against the slings and arrows of outrageous fortune and to build resilience and build optimism and a positive mood. So we . . . still there?

Dr. Dave: Yeah, you just cut out; can you hear me?

Hanson: Yeah, yeah, I can hear you. I was just saying at the very end that those relational resources can really are critical supplies in our backpack on our journey through life.

Dr. Dave: Okay. You know, just stepping back a little bit; you were talking about the importance of what we focus on and how that shapes our experience. And I just wonder about the possibility of a kind of return of puritanism; I don't know how to say it other than that, that a kind of judgment; I like to read crime novels. . .

Hanson: **. . .** yeah, yeah.

Dr. Dave: . . . so there's this little voice then that says, oh, am I putting too much consciousness on reading crime novels or I mustn't see this movie or do that other thing that isn't entirely positive. I'm remembering back in the seventies when est was very big and friends would say, oh, don't run that old tape; there's a certain truth to that and at the same time it seems to me that there is a danger of a kind of Puritanism.

Hanson: By Puritanism do you mean a kind of fixation on only good news, is that what you mean by Puritanism?

Dr. Dave: Yes, well, a fixation on yeah, and a fixation on, I guess the denial of the darker side of existence.

Hanson: Yeah, okay. Yeah, I might use myself a different word. But that's, okay, let's, now we know what we're talking about. Well, I, I would say that I think that the thrust of neuroscience is to help us appreciate our continuity as human beings with our animal, with our other animal cousins and an appreciation of the ways in which inside this brain, is, if you will, an inner worm, an inner iguana, an inner rat, an inner monkey, an inner caveman, cavewoman, and an inner 21st century human. In other words, inside us are in terms of, I won't call it the dark forces but there are definitely are lower animal factors, programs, structures, processes, and so forth that evolved over 600 million years; we share 20 percent of our DNA with bananas . . .

Dr. Dave: (laughs)

Hanson: (laughs) I mean, you want to get high and mighty just remember that, you're walking through the produce department at your local store! So 98 percent ballpark of our DNA is identical to that of a chimpanzee. Hoo hoo, hoo hoo you know . . .

Dr. Dave: . . . right.

Hanson: . . . so there's a similarity there. So I think neuroscience has to help us appreciate the ways in which those forces are alive and well. As you know, one of the chapters in the book is about the two wolves in the heart which the title comes from a Native American story that says that basically there are two wolves in every person's heart, one of love and one of hate. And it all depends on which one you feed each day, right? So we all harbor a wolf of hate in our heart and neuroscience and

evolutionary neuropsychology, I think takes our attention there and I think that as someone who has been very involved in spiritual life and has definitely had a toe in the water if not an entire leg of the New Age world as well as definitely a lot of Buddhism. I think there can be a tendency, you're right to turn away from really appreciating the reality of aggressiveness, of hate, of envy, of *Schadenfreude,* of jealousy, of cruelty, of plague and so forth in the human heart. And I think of anything, modern neuropsychology is a corrective factor for that on the one hand. On the other hand, I think modern neuropsychology is really teaching us that if we dwell beyond the point that is productive on negative themes, that harms us and others. The way I think of it is that there are 2 fundamental mistakes a person can make, on the one hand they can think there is no tiger in the bushes when there really is one, alright. Or alternately, they can think there is a tiger in the bushes and be afraid of that tiger when in fact there is no tiger at all. Now Mother Nature wants us to make that second mistake a thousand times over to avoid making the first mistake even once, right? Because the first mistake makes us lethal consequences and we don't pass on our genes. So I think the brain in general is hard wired actually to be drawn to the negative, to dwell on the negative that's why in journalism the famous saying is, if it bleeds, it leads, in other words, it leads the News hour or leads the headline story because it's a disaster, it's a problem, it's a murder, it's war, it's some dreadful scandal, it's something like that. So we're very drawn to negative themes, right?

Dr. Dave: How does that play out in during meditation as the brain then is sort of as attention is kind of wandering around or . . . ?

Hanson: . . . yeah. Well, I think in meditation, as in regular life, we tend to be drawn to negative material. You go through a day and a hundred things happen; let's say 50 are neutral, 49 are mildly pleasant and positive, 1 was unpleasant, what's the one thing you think about as you go and drift off at sleep at night?

Dr. Dave: Right.

Hanson: Yeah, so the brain is, the brain is Velcro for negative and we have what I call paper tiger paranoia. We tend to be, most people by default, think they live in a world of threat level orange whether it's at the airport or in their relationships, or on their job, right? And so I think that whether it's where your mind goes when you're meditating, or where your mind goes in a business meeting, or when you're arguing with your mate, or thinking about your kids, it tends to be drawn to the negative. I think both mistakes are important not to make, in other words, I know people who don't deal with the real tigers in their lives, they don't address that scary lump under their armpit, they don't brush their teeth enough, they don't deal with the fact that they really do need to be saving money and not running up their credit card bills, politically, frankly, think about the days before 9/11 the first 9 months of the Bush administration where they were getting warnings all over the place, that Al Qaida was a serious threat and they just brushed them off because they were focused on other things including Iraq. That was a situation where people missed real tigers with terrible consequences. On the other hand, other two mistakes people usually make the second one much more often. Because that's Mother Nature's plan, right? She wants us to be worried , our ancestors that were all Zen and they've been listening to the Dr. Dave, Shrink Rap Radio and they are all mellow and all that, whap! they all got eaten.

Dr. Dave: (laughs)

Hanson: Our ancestors that were nervous, and irritable are the ones that pass on their genes, right and we're their great-grandchildren at the top of the food chain with nuclear weapons today so that's our legacy. And I think that understanding how the brain works, can really take us to appreciate the challenges from the standpoint of spiritual practice, the brain did not evolve to meditate. It did not evolve to sit quietly for 45 minutes paying attention to the breath after breath after breath after breath, it didn't do that. So that's why also in the book I pay a lot of attention because I'm interested in meditation for the real world. People who are really busy, I think a lot of meditation practices were created by turtles for turtles and turtle environments to become better turtles . . .

Dr. Dave: (laughs)

Hanson: . . . jackrabbit world. (laughs) ...the temperamental spectrum. And so how do we adapt practice for jackrabbit householders who have a serious interest in awakening?

Dr. Dave: Oh, that's would be a great topic for another interview. There's so much here that when we could touch on that we're running out of time. So let me, as we begin to wind down, let me ask you another question here.

Hanson: Sure.

Dr. Dave: You've noted that the back and forth swing of the pendulum in that one of the most recent ones is the explosion of interest in mindfulness. And in your Google talk, you say mindfulness is not enough. So . . .

Hanson: Yes.

Dr. Dave: **. . . w**hy not? What's lacking?

Hanson: Good question. Well, mindfulness is super important but that we mean is holding some content of awareness. Whatever it is, it could be something outside the person like what someone is saying to you let's say at a difficult conversation with a family member or a friend or something important at work, holding that content of awareness which could also include a feeling inside oneself or a thought inside oneself, holding that content of awareness in a large space of awareness. It's a little bit; mindfulness is the distinction between being in the movie swept away moment to moment in the stream of one's reactions versus being outside of the movie sitting 20 rows back in the theater munching some popcorn watching what's happening and going, wow, that's intense. Okay, that's mindfulness. Well, mindfulness is critically important but I think there are fundamentally three major phases in any kind of personal healing or personal growth, psychological healing or spiritual practice. The first phase is to be aware of what's there. That's mindfulness. Okay, that's an important phase but at some point what's there needs to move on. And mindfulness alone can sometimes be enough but very often people need to move to the second phase which is releasing what's there, helping it move on outside the door. That's where you and I were trained Dave. In most of clinical psychology is about the second phase. It's about letting go pathogenic thoughts or feelings or desires in various ways ranging from relaxation methods to venting, cognitive therapy methods, insight and all the rest, letting

go, releasing, right? And then after we have done the second phase, we need to engage the third phase which is replacing that which we have released, alright. So as I summarize in six words, the first phase is to let be, the second phase is to let go, and the third phase is to let in, alright. All three are important but even someone as into mindfulness as the Buddha, who among the elements, the 8 elements of the noble eightfold path, identified right-mindfulness as a critical element, alright? Even he also identified right effort which it boils down to essentially pulling weeds and planting flowers in the garden of the mind. So both are important. I think what has happened in both Buddhism in the west in the last 20 years as well as much more broadly in the culture together generally the culture of pop psychology, popular psychology, positive psychology and in the movement of the mindfulness into psychology as well as non-dual psychology, there has been an enormous emphasis on awareness alone as if awareness alone is always curative. Often it is but not always. I see a lot out of people who are very aware, I myself am often very aware of thoughts or feelings or reactions, that are, they've come out of that inner iguana, that inner rat, that inner monkey, that inner caveman cavewoman that are not helpful, they're not happy, they're not wholesome. And they don't just go away because I'm aware of them, I got to work with them, I've got to do something with them. People have to do something with those things that arise. And it really is helpful to acquire methods to be able to do that. Now, if you skip the first phase, then the other two don't work very well,. You got to start with open, spacious awareness right, because that's foundational. You got to let stuff be, you go to stay within, you got to experience it, you go to know what it is, you have to bear it sometimes. But then, then that after you have done that, you can help it move along. And some what has to happen with people to do the first phase, but the way, is that they need to engage the third phase first, in other words, they need to take in positive resources initially including for example, the fellow sense of being cared about by others or the growing internalization of ordinary, simple, mild, positive experiences of daily living like simple gratitude for the beauty that surrounds us, for the taste of a chocolate cupcake or whatever. They have to do that first to calm the body down, to lower their stress level and build up the internalization of coping resources for resilience. They have to do that first before they can bear their own experience, before they can tolerate accessing the feelings or the thoughts that they do need to engage in open, spacious, mindfulness as the prelude to helping them release and move on. So anyway, that's how I think of that and how I think about why mindfulness alone is not enough.

Dr. Dave: Okay, well, thank you for that and I wanted to mention that you and Dr. Robert Emmons who's done research on gratitude are giving a presentation at Cal Berkeley on October 22, 2010. Would you like to say a few words about that?

Hanson: Oh, thank you for asking. Well, the Greater Good Science Center as you well know, is a world-class institute at UC Berkeley founded by Dacher Keltner so a lot of work on goodness broadly defined as an inherent and vital part of human nature and is the product of a number of powerful evolutionary forces. So the Greater Good Science Center does a variety of things, it's a great resource for people to know about and among the things it does, is that it puts on really neat workshops with really great people that I frankly am very honored to be invited into. Dr. Emmons is a leading authority on gratitude; speaking of gratefulness, a moment ago, and so I had this particular workshop which is I think priced very affordably for people and they can find out more if they just Google "Greater Good Gratitude ". Those three words will take you right to the link to sign up for the workshop or at least find out more. We are going to be doing an all day workshop there just for the general public that will be both fascinating and practical and I get to have a very neat hour during that workshop when I'll be

talking about taking in the good and why it's really important not just feel gratitude and have it pass through the mind frankly like water through the sieve, water through a sieve which is the normal reality but rather to stay with that experience of gratitude and to work with it in ways that are neurologically savvy, that are brain savvy so that it really, really sinks in and sticks to your ribs as it were.

Dr. Dave: Well, speaking of gratitude, I'm very grateful to have had you on the show. Dr. Rick Hanson, thanks for being my guest today on Shrink Rap Radio.

Hanson: Thank you Dr. Dave and it's been a real pleasure, you took me into, you took us all into the deep end of the pool here.