



MIND & LIFE

Mind & Life Podcast Transcript Cliff Saron - Embracing Complexity

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Opening Quote – Cliff Saron ([00:00:03](#)): *With this deep acknowledgement of our embeddedness with each other and with our physical world, where we are dependent upon each other for survival, the true connections that we have with each other are the things that define who we are. And so we have an enormous individual responsibility—how we choose to spend our time, the resources we consume, the "heart print" we bring forward, is of enormous consequence.*

Intro – Wendy Hasenkamp ([00:00:45](#)): Welcome to Mind & Life. I'm Wendy Hasenkamp. Today, I'm speaking with neuroscientist and contemplative researcher Cliff Saron. Cliff is a pioneer in studying the effects of meditation on attention and emotion. And he's been deeply embedded in the field of contemplative science since the earliest days. He's also an advocate for nuance, complexity, and mystery—things which often get lost in today's world of soundbites and clickbait.

([00:01:16](#)) And so perhaps not surprisingly, this conversation goes deep. We begin by exploring Cliff's winding path into contemplative research, including connections along the way with folks like Richie Davidson, Evan Thompson, Francisco Varela, and the Dalai Lama. We then talk about some of his early work studying how brain signals can predict behavior. And this gets us into the murky territory of free will and some of the implications there. Cliff then describes the work he's perhaps best known for, the longitudinal study on meditation called the Shamatha Project—still I believe the longest running research project that's ever been done on meditation—and we get into some of the findings that are emerging. Specifically, we talk about the effects of a three month meditation retreat on attention, markers of cellular aging, and purpose in life. Along the way, we discuss the importance of context in meditation research and Cliff also describes recent efforts to recruit and work with more diverse populations and how that experience has changed the way he thinks about research. We also talk about communicating the nuance and uncertainty that's inherent in scientific endeavors, and challenges with the media and the state of public education in science. Cliff ends with a reflection on the African concept of ubuntu, the idea that "I am because you are," and the importance of embracing our interdependence.

([00:02:53](#)) As always, there's lots more information in the show notes with links to papers and lectures from Cliff. And for those who are interested in the research, there's a podcast extra this week with some pretty fascinating scientific findings on how meditation affects the way we respond to the suffering of others.

([00:03:12](#)) Before I sign off, I'll just share that this marks the end of yet another season of the show. I have to say it's been really cool to see how, over time, we're building a kind of digital archive with these episodes that's telling the fuller story of contemplative science and what we're learning about our minds

through these different ways of knowing. We now have over 30 episodes, so if you're newer to the show, you may want to go back and check out earlier conversations. There's a lot of deep wisdom there to explore. We'll be back with Season 4 in just a couple of months. And keep an eye on your feeds in the meantime as we may drop something in there before then.

[\(00:03:51\)](#) And thank YOU—for listening and for your feedback and your support, it's been just amazing to see our audience grow. We're thrilled that so many of you are finding these conversations valuable. I hope you all have wonderful holidays and that 2022 is full of joy and peace and healing and connection. And I hope this episode brings some joy as well. It's my great pleasure to share with you, Cliff Saron.

Wendy Hasenkamp [\(00:04:23\)](#): Welcome Cliff. It is so wonderful to have you on the show. Thank you for joining us.

Cliff Saron [\(00:04:28\)](#): It is a pleasure to be here, Wendy. Really thankful for this opportunity.

Wendy Hasenkamp [\(00:04:35\)](#): You have really been in this field since the very early days, and so I'm excited to get your perspective on how things have unfolded. As I think you know, I usually just start with a little bit of history from the guest and your own personal story. So I would love to hear how you got interested in meditation, and how you came into the field of contemplative science.

Cliff Saron [\(00:04:59\)](#): Sure. There's a certain way in which I was a bit born into this. And there are a number of strands that really figured quite formatively in my interest in meditation and in science. About five months before I was born, father's brother committed suicide consequent to receiving what turned out to be neurotoxic experimental medications as part of the project MKUltra.

Wendy Hasenkamp [\(00:05:37\)](#): Oh, wow.

Cliff Saron [\(00:05:39\)](#): I did not learn of this till I was 18. But I was raised with a very complex relationship with science because of a certain almost deification of it on the part of my father, bringing his brother who had childhood diabetes and some psychiatric issues consequent to it, to the experts in the early 1950s, when the CIA was funding these experiments. Wormwood is a series on Netflix, a documentary series about that program. After his brother died, my father tried, from a background in electrical engineering and radio, to understand the human mind, to try to make sense of what happened to his brother. That was the same time the Josiah Macy Foundation conferences that created the field of neuroscience were happening, as well as the early emergence of humanistic and existential psychology at the New School. And my father went from electrical engineering as a day job, and working in television, to being a self-educated student of this emerging field, and got to know the leaders at that time. And I'm an infant. But I began hearing about neurotransmitters in elementary school.

[\(00:07:17\)](#) At the same time, I turned out to be a very asthmatic child. And I spent a great deal of my childhood sick and struggling to breathe, and really coming close to death several times. One time I remember getting very peaceful when I was told I was somewhat blue, being wheeled into an emergency room around age nine. Another instance of medical "wisdom" (said sarcastically), was that the experts on childhood allergy and asthma in the early 1950s suggested if a child didn't do well in New York, they be removed from their parents' care and taken to the Denver School for Asthmatic Children. So my parents had a sword of Damocles, so to speak, hanging over my health and my presence.

(00:08:24) In this mix, I came to, just as a child, understand a close relationship between my emotional state and my relaxation and my ability to breathe. So I wound up spending a lot of time doing what I later learned was mindfulness of breathing, in a certain respect. When I would go to summer camp, invariably the mold would cause me to have acute asthma, and I couldn't participate. But what I remember is sitting—after getting an oil-based subcutaneous injection of adrenaline—is sitting by the screen window in the infirmary, breathing, and just being grateful to be alive. Seventeen years, 18 years later, I'm sitting at IMS, at the Insight Meditation Society, not far from where I had asthma in summer camps, and I have this flashbulb memory—that here I am, sitting by the window, watching my breath, grateful to be alive.

(00:09:42) So I have this thread of... this complex relationship with science, this phenomenological body of awareness of relations between mind states and health states. And then I was also given a book when I was seven called *Cosmic View: The Universe in 40 Jumps*. Which was a picture of a girl with polio, with a cat in her lap in a wheelchair in a Danish school. You turn the page and you're 10 meters above her. And then 100 meters and... This went all the way out to them saying, "Each dot's a galaxy and printing doesn't allow us to make a denser page than this." And you turn the page and you go down to the radius of the hydrogen atom. I could not stop being engaged with this book. Because it was telling me reality is organized across multiple scales. This was the book that was the inspiration for *Powers of Ten*, that Charles and Ray Eames made the movie, that Scientific American published as a book, that then NSF funded as an IMAX movie called *Cosmic Voyage*.

(00:10:58) But this was a recurrent motif of always wanting to drill down and pull back. So this informed going on to college and studying biology. But in the middle of all this, I began going to conferences at humanistic psychology meetings, as well as to scientific conferences at MIT on biophysics. And I'm still in high school. So in the middle of all this, Ram Das shows up on the radio. And I'm into recording sound, and I wind up recording Ram Das for WBAI, the Pacifica radio station in New York.

Wendy Hasenkamp (00:11:43): It just so happens?

Cliff Saron (00:11:45): Well, my dad was at NBC and he sometimes helped get materials, magnetic tape, and stuff for the Pacifica.

Wendy Hasenkamp (00:11:54): But with Ram Das, you didn't choose to record him, you were just asked to do something?

Cliff Saron (00:11:59): No, I chose. I was listening to his teachings... Because in the background of this strange childhood was also Alan Watts and Krishnamurti. And because I was asthmatic and I did not—dare not—smoke marijuana with my compatriots, I used to listen to Indian music, and think about how this sonic embodiment of some sense of the divine, in a very non-linear way, was a human expression of potential. So the human potential movement, the nascent interest in psychology, and brain studies, were all present even before I went to college.

(00:12:50) And in college, I found it really hard to keep up with the pre-med students, but I was still going to humanistic psychology conferences in the summers. And in 1973, I met a graduate student in Toronto at the Association for Humanistic Psychology, whose name is Richie Davidson. And we became friends and I wound up working with him for 14 years on a daily basis, building his laboratory and taking the skills I had from sound recording and applying it to brainwave recording. Simultaneously, I was learning a bit about filmmaking, and I was interested in other cultures and studying more rigorously

religion from the Hindu philosophy side, along with being a bio major. And this set me up to meet Chögyam Trungpa when he came to Harvard Divinity School to announce Naropa. So I went to that fateful first summer in 1974 for 10 weeks.

(00:13:59) And at Naropa, this new Buddhist university, I met Joseph Goldstein. And his articulation of paying close attention to experience—close attention to intention—landed for me as a simultaneity of points of view I had from psychology, from neuroscience, and from spiritual experience. And there was a simplicity about this that was a great release. At Naropa, I was, in addition to Joseph Goldstein, deeply touched by the presence of Gregory Bateson. And in Gregory, I found a kind of intellectual father. His watch words are "the pattern that connects," and I think that's one of the touchstones to link across all these different levels of organization of reality. So I was in his classes. And then in the summer of 1975, Evan's father-

Wendy Hasenkamp (00:15:18): Evan Thompson.

Cliff Saron (00:15:19): Right. He hosted at Lindisfarne a wonderful meeting with Jonas Salk and with Pir Vilayat Khan, with Gregory, and with someone I hadn't met yet, Francisco Varela.

Wendy Hasenkamp (00:15:33): We have some of this story too, previously on the podcast with Evan as well. So the early Lindisfarne, yeah...

Cliff Saron (00:15:41): Right. So Evan was a tweener, I think, he was under 14 when I first met him. So in that sense, that was a transformative week because it provided a consolidation of many of these strands. So that when I went back to school, I could be involved in research within the context of a forming spiritual community that had a very open handed and holistic sense of what research could be in the midst of how primitive our tools were. And I wound up living in David McClelland's house—he was chair of Psychology and Social Relations at Harvard, a very famous scholar of motivation—and did a research project with Richie and him on power motivation in Harvard undergraduates. Working for David McLelland, who is Mr. Motivation, was something where he became the kind of ultimate enlightened boss. And I just saw the benefit of focused work and being in the stream of research. And that's what situated me to join Richie in his lab. And at SUNY Purchase, where we were for the first nine years, there was actually a kind of wave back and forth from IMS to the lab. I would do retreats every vacation and Jack Cornfield and Joseph Goldstein came to Purchase and did weekends with us and there was... *[laughter]*

Wendy Hasenkamp (00:17:27): That's so interesting because this is well before there was ever any research in the lab around meditation, right?

Cliff Saron (00:17:33): Right. This was all very meaningful to us personally. And there was this persistent, how do you integrate the thing itself that touches one so deeply in the silence of a contemplative retreat, in your daily life? So having done these retreats and then being immersed in the lab, there began to be a confusion as to, was I on retreat in the lab or in the lab on retreat? Because they begin to be less separable, as a motif. Around this time, I have met my girlfriend who is now my wife, Barbara, who's a cellist, a musician, and doing retreats every vacation are taking a backseat to being with her and her family on vacation. And then, of course, this has come full circle since we teach together how cello practice is a kind of mindfulness practice, is a kind of investigation that overlaps with the art of doing science.

(00:18:41) So eventually, I need to go to graduate school, because I never went to graduate school. I did 14 years as a kind of research technician, research associate, adjunct-ish faculty for teaching. But I knew that a PhD was inescapable in this lifetime, but I put it off as long as I possibly could. [laughter] In 1978, I had a unique, in my life, experience with respect to a scientific presentation. The man who became my mentor in graduate school, Herbert Vaughan, gave a talk about being able to understand where things were coming from in the brain by electrical mapping techniques that connected what could be recorded invasively in Macaque monkeys with what could be recorded non-invasively at the surface of the skull. And it blew my mind. And so I wound up becoming his last graduate student, starting graduate school in 1989.

(00:19:51) So in the fall of 1990, Richie Davidson and I met at the psychophysiology meetings in Boston. And I'd heard that he was going to a Mind & Life conference, so he was going to talk with the Dalai Lama. So I said to him, "So are you all excited?" And he said, "I can't go." He had a family medical emergency and two small children. And then there was this spark in his eye, he said, "Do you want to go to Dharamsala?" And three weeks later I was presenting at Mind & Life III.

Wendy Hasenkamp (00:20:33): My goodness.

Cliff Saron (00:20:34): ... and rooming with Francisco [Varela]. And that experience was a bend in my river that has not unbent.

(00:20:41) – musical interlude –

Wendy Hasenkamp (00:21:17): Can you talk a little bit more about that meeting and what it was about, and how it shaped you?

Cliff Saron (00:21:23): So that meeting is published in a book called *Healing Emotions*, and it was essentially mind states, brain states, and health. And I was there to present work relating to psychobiology of different emotional states and personality types, and immune system responses as a function of emotional, baseline personality characteristics. It wasn't based on studying meditation. And the experience of presenting this material to His Holiness the Dalai Lama was really unique. Because you could feel his attention as almost like a tractor beam, if you will. Any sentence that you said, if you made space in your delivery, would result in his picking up the idea, rotating it, seeing if you could see it from a different angle, acknowledging the idea, and putting it down. And then being ready for the next aliquot of intellect. So 31 years later, this is November 1990, it's still a palpable memory of that quality of kind attention with a certain kind of stability. And no rush. So in some sense, each part of an argument, each reveal of a fact, was building a case, and a picture. And in order to see the picture when one finishes the discourse, you need to hold all of this in mind.

(00:23:21) It was at this meeting that, at two in the morning on some night, Francisco said we... we're two old EEGers, we should do something. And that was the genesis of the subsequent research project that we did with the monks in the hills of Bhagsu Mountain in 1992, with Alan Wallace and Richie and Francisco and Greg Simpson and others. And there, in dialogue with several of the monks who were in retreat, we had time to hear about a view of compassion that unalterably affected our motivation for the... till now. Particularly from one conversation and one afternoon—I have the MP3s on my laptop from the cassettes I recorded, where you can hear the birds and the goats in the background—on the question of, what is the relationship between sadness and compassion? This is a monk named Geshe Thabke. And he spoke that one needed to find the suffering of another simultaneously unbearable, and

yet find a way to love the conditions that gave rise to that, almost the way a mother loves a child. To penetrate into the nature of causes and conditions, so that you kind of get an exploded 3D diagram of the present moment, and see where you can bring benefit. So if you can manifest insight into some sense of chains of causality, you may be guided to do a more skillful thing than the first impulse.

Wendy Hasenkamp ([00:25:14](#)): Hmm. It's making me think of what you said about the... what was it, 40 Jumps to the Cosmos?

Cliff Saron ([00:25:21](#)): Yes. *Cosmic View: The Universe in 40 Jumps*.

Wendy Hasenkamp ([00:25:24](#)): Yeah, which just... You know, I think so much about interdependence at all those levels, right? And I hear the same conclusion out of thinking of the interdependence of all the causes and conditions that lead to any moment, and how understanding that can lead to more compassion. Is that kind of what you mean?

Cliff Saron ([00:25:44](#)): Mm-hmm (affirmative). So I eventually went back, and graduated doing a dissertation inspired by those monks, but on something entirely different at first glance, which was visual motor integration and inter-hemispheric transfer across the corpus callosum. Which has already appeared, I think in this podcast, this was... Andreas did an experiment like this.

Wendy Hasenkamp ([00:26:16](#)): Right, right. Andreas Roepstorff shared a story of working in the fMRI as an anthropologist.

Cliff Saron ([00:26:23](#)): Right. But I wanted to understand intra-individual differences—how one's response to a stimulus is different moment-to-moment. But [with] the same ostensible input.

([00:26:43](#)) So I'd been very influenced by an Israeli neuroscientist, Amos Ariely, who actually had an insight on a meditation retreat by noticing how sound is different, you know, if you hear the radiator creaking and you're meditating, it doesn't always sound the same (even if the pipe is banging the same). Or the ticking of a clock. If you're paying really close attention to your auditory experience, you will see that sometimes the tick is barely audible. What changed? Well, your brain state changed. And so he went on to do seminal work that was published in *Science* and has been cited many, many hundreds of times, looking at the brain activity in cat visual cortex one second before a flash, that can account for almost 80% of the variability of the response to the flash.

Wendy Hasenkamp ([00:27:42](#)): Mm. So the brain state before you even encounter a stimulus is shaping the way that you respond.

Cliff Saron ([00:27:50](#)): Exactly. Neural context. So this again is in this theme of nested levels of analysis, or organization. So on a sub-second time scale, there is alteration in the consequences of any particular input. So I had people sit for nine hours, lifting their finger off thousands of simple flashes. *[laughter]*

Wendy Hasenkamp ([00:28:21](#)): Oh my goodness...

Cliff Saron ([00:28:23](#)): But then I analyzed it as a function of the spontaneous fluctuation of their reaction times. And was able to map very different pathways of cortical activation, depending upon whether you're going to be fast or slow.

Wendy Hasenkamp ([00:28:39](#)): This is fascinating. Can I take a little tangent here for a moment?

Cliff Saron ([00:28:42](#)): Sure.

Wendy Hasenkamp ([00:28:44](#)): It might be more than a moment *[laughter]*... But this is something that's really fascinated me, just with relation to our subjective experience and also the issue of free will, which I imagine you've thought a lot about. And I can see you cringing...

Cliff Saron ([00:29:00](#)): It's a smile cringe. *[laughter]*

Wendy Hasenkamp ([00:29:01](#)): Yes. So, I'm just curious how you think about it—and it might be more in depth than we want to get into right now—but given all of your work and knowledge about how a given brain state will condition the next brain state, I guess you could say, and shape the incoming stimuli. This, to me, goes right along with what you were saying before about causes and conditions leading to the way that things are. So somewhere in there, do you think there's any room for this idea of free will? Or how do you think about that?

Cliff Saron ([00:29:39](#)): Thank you for this question. That is said with sort of a graph going up with gratefulness and a graph going down with grrrrr... *[laughter]*

Wendy Hasenkamp ([00:29:52](#)): I have the same feeling. I almost didn't ask it, but...

Cliff Saron ([00:29:57](#)): So I think about this a fair amount. Because you have to say, there can be change and there can be learning and there can be development. And there is development. So what is the relationship between conscious intention, deliberativeness, and from a neuroscientific point of view, a bit of an illusion of free will? And I think that if we roll way back, we are fundamentally gist making machines.

Wendy Hasenkamp ([00:30:35](#)): Gist making?

Cliff Saron ([00:30:36](#)): Gist making. We forget so much of yesterday during a good night's sleep. We coalesce and condense and confabulate meaning in our everyday lives. And we act with the experience of autonomy often. But I am so moved by the proportion of our existence that is below conscious awareness, that I cannot escape thinking about it as a large presence. You know, Raichle talked about the default mode as the dark matter of the brain, but I think this is even more dark matter. That this is a pervasive lack of access. Because if we had to think of every planful moment for every step, every time we catch a ball, every time we lift a cup, every time we try to utter a word, the lack of automaticity would get us totally bollocksed up and we wouldn't get to square one.

([00:31:51](#)) So we have a way in which experience presents itself as full of choices. And the rhetoric around contemplative practice is often enhancing this space of choice. I think about it more like a movement toward a different kind of automaticity. And that arises from practice (in a very large and loose sense of the word practice), because it overlaps with commitments to values. It overlaps with the learning from pain experiences and making mistakes. It overlaps with the impact of wise words of others. It impacts from knowing what it might be that we are, if we are as embedded as I think we are in each other. So when I sometimes talk about the function of sitting, or doing mindfulness of breathing, I think of it as a way of holding up a window—like putting a stick, if the window's going to fall down on its own. A technique might be a way to keep that window up a little, but the technique is not the purpose

of the time. The purpose of the time seems to be to look through what you see with the window open. And what I think you see is the human condition. You see your relationships. You see the world as it comes to you. And behind it all is this sense of limitation, of mortality, of preciousness.

(00:33:44) Free will is a construct that doesn't come from neuroscience, it comes from religion as part of moral teaching. So there may be a logical error to try to map it onto "where is the free will area"... Because one's experience conditions one to respond in a way consistent with what one holds dear. And along the way, those acts, post hoc, inform us what we did. Now, we know we can find signs of a movement that is volitional way before people are consciously aware they're about to do something from measuring electrophysiology. We are full of what are called corollary discharges, that accompany actions and even eye movements. Our conscious experience is constantly being refreshed from an extraordinarily partial set of elements and awarenesses. We're sitting in front of screens while simultaneously in our short term visual working memory, we only have four to six elements of the scene in awareness at once. The whole visual world is actually calving into the ocean—the way glaciers break off and go in, so our experience goes.

(00:35:23) In the midst of what I think this body-mind embedded entity is, there isn't the mechanism for the solidity of the self to consciously choose and manifest what's called free will. Yet, there is learning. There are shifts in probability distributions, from complex sets of causes. And as one learns about what makes one feel better, presumably, you make alterations in your environment that are helping you. You know? "Don't bring cookies into the house, and I will look a little more svelte." Put a Buddha on a table and a glance will include what such statuary could represent. So, this "investigating the mind" icon enters this calving process, and now my refresh includes that. Same with people who one cares about, same... I mean, why do we create nests full of things that remind us of our center? You're smiling...
[laughter]

Wendy Hasenkamp (00:36:56): I appreciate your explanation and perspective on this question. I mean, it's not a question that's really easily answerable, of course, but... I also really like that you raised that free will is a really more of a religious construct. And so it's maybe not even of the purview, necessarily, of neuroscience or it's not... You just think about it differently from the perspective of a brain, and causality states. So thank you for going down that rabbit hole with me.

Cliff Saron (00:37:30): A pleasure.

(00:37:30) – *musical interlude* –

Wendy Hasenkamp (00:37:30): So, I derailed your story...

Cliff Saron (00:38:10): Well, in terms of the move to contemplative science, I finished this dissertation looking at moment-to-moment variations in a single individual, in response to a very simple task. All you had to do was lift your finger when you saw a flash as fast, as you could. I found that task overwhelming in terms of thinking about what all that came online in order to do the simplest task. And because there was so much intra-individual variability, and I collected a study's worth of data, as I was beginning to explore these patterns of regional activation, sensory motor activity.

(00:39:04) And then sometimes people would go, "Ah, shucks!" (That's the PG-rated version.) "I forgot to push the button." And in that sense, what ties the fact of a stimulus to a motor response is short-term working memory and sort of the executive control of this task set. "Oh, yeah. I did see something. I'd

better push the button." So, this made me think that a single person... there's no measure of central tendency. There's no, just "your reaction time." It's essentially a rainbow of multiple processes, even within one experimental condition (of just, see that flash in that location and push a button).

(00:39:51) That conditioned me to think about neurophysiology and cognitive neuroscience from this kind of almost bottom-up way that we've been talking about, how the moment conditions the response. And that, I then realized, was a kind of contemplative gloss on a psychology experiment, a little sensory motor experiment. So I'd think of the monks on Bhagsu Mountain when I'm spending hundreds of hours analyzing gigabytes of EEG data, of graduate students who gave me so much of their brain activity that I induced neuroplasticity just doing the task. But it allowed me to get measures of behavior and electrocortical activity with R-squares of 0.95. That is, 95% of the variance was accounted for in their behavior by what I could record from over the motor cortex.

Wendy Hasenkamp (00:40:54): Wow. And this was the behavior of pressing the button?

Cliff Saron (00:40:59): Yeah. Behavior writ very small.

Wendy Hasenkamp (00:41:00): The simplest, yeah, in the simplest form.

Cliff Saron (00:41:03): Lifting your finger. (It was actually lift-up. Lift-up from a photo cell.)

(00:41:08): So into this... This is kind of happening while I've done this experiment and this project in Dharamshala and, what am I going to do after I graduate? So Alan Wallace was instrumental in being the translator of worlds, between these monks who only spoke to Tibetan and our team. But it was clear we needed to do a study longitudinally, because these extraordinary monks—who had chosen out of many, many hundreds and thousands of monks, to be practitioners on retreat—could be self-selected. And so, what is the consequence of training compared to the individual differences of those who had chosen this lifestyle? So there was a new center being developed, an interdisciplinary center that I learned about at UC–Davis. So the Center for Mind and Brain became the perfect interdisciplinary launchpad for this idea that Alan had to do a longitudinal study of intensive meditation practice to try to address the issues of self-selectedness that we found with these wonderful monks we spent time with, in a context in which we could actually bring our equipment along. Originally, Alan wanted to do a three-year retreat study. And I said, "That's really completely unrealistic; let's do a one-year retreat study." *[laughter]*

Wendy Hasenkamp (00:42:57): That's already quite...

Cliff Saron (00:43:00): So, that was my un-realism.

Wendy Hasenkamp (00:43:02): Yeah.

Cliff Saron (00:43:03): But it got us thinking about tracking the intra-individual dynamics of psychological and perceptual, emotional change across a long period of time. Because the question is what's the control group, if you have a year of retreat experience? And Alan was focused on a type of practice called Shamatha, meditative quiescence. So there were three tech techniques that Alan taught. One was traditional mindfulness of breathing, with an emphasis on staying with tactile sensations of the breath, and when your mind wanders, gently bringing it back. And then moving to what he called settling the mind in its natural state. Which is essentially, if you could find the focus of attention that is your mind's eye and rest your attention there, sort of take your seat at the omnimax of everything that arises. And

within that frame, the third technique was awareness of awareness itself—looking for the invariance that is present in every moment of experience, called Shamatha without a sign. Most people in our project did the mindfulness of breathing, the bulk of it.

(00:44:33) So ultimately the issue of a control group and wanting to do a shorter pilot study, three months of intensive practice, became something that we could float to funding agencies, and were very generously supported by many. And the Fetzer Institute and Barry Hershey and the Hershey Family Foundation were instrumental in getting this off the ground. And so, we put together a whole team of dozens of investigators, and we spent at Davis, oh, two years, thinking about all the domains of experience that might be impacted by intensive retreat experience. And that gave rise ultimately to something in 2007, we ran at the Shambhala Mountain Center as the Shamatha Project.

Wendy Hasenkamp (00:45:28): Right. Which is still, I think to this day, the longest longitudinal study of meditation that's ever been done. Is that right?

Cliff Saron (00:45:36): Well, we include data for seven-year follow ups, that we have published. And I sort of the orchestra conductor of an extraordinary band of scientists and trainees and students. And we are still publishing to this day, results from that study, and dissertations are still drawing on it as we speak.

(00:46:03) And that was another bend in the life river, to do that study. Because we built two state of the art EEG laboratories, psychophysiology laboratories, in the basement of a meditation hall, in the Rockies. And had two groups of 30 folks, about, each do three months of training. The folks who were in the wait list control group, we flew them out to be tested at the retreat center after living for several days, in similar housing at the same altitude, and then they went on to do their own three-month retreat (three months after the end of the first retreat).

Wendy Hasenkamp (00:46:50): So I know you've published a host of papers, as you said, on this project. Do you want to share some of the highlights of things that you've found from this study?

Cliff Saron (00:47:00): So we have a number findings, but I think it's really important to contextualize... When you hear about some of the things we've found, what exactly the relationship is of meditation practice, compared to retreat experience, is really important. In addition, specific meditation techniques [are] definitely coexisting with the overt behavioral change, instantiated by doing the practice.

(00:47:40) So Paul Grossman and I—many, many years ago at the Summer Institute of Mind & Life—came up with this phrase, the tuchus effect (which is Yiddish for sitting on your bum). So if you sit for 6, 8, 10 hours a day with your eyes closed, and you refrain from talking, you refrain from imbibing media, you're not reading, particularly. You're in a beautiful natural environment. You're with a group of like-minded individuals, you're in the presence of a charismatic and respected teacher. The demand characteristics of that set-up are profound.

Wendy Hasenkamp (00:48:27): Demand characteristics, just to explain...?

Cliff Saron (00:48:31): Sure. Demand characteristics are the features of an environment that create expectations, and those expectations may be unconscious as well as conscious. So if you know you're being studied, then you may pay more attention to your engagement with the tasks. Because if you're being studied in the context of a meditation retreat, for the purpose of using science to enhance the

validity of these practices (potentially), in a Western wider world of skeptical regard, well just being in the study has an impact. But also the world view of the teacher has an impact. Also the religious framing of a practitioner, or their spiritual goal. So when I say demand characteristics, I mean it in the largest sense... That we typically [use] in psych experiments, how the experimenter is relating to you, and the way things are presented—those are certain demand characteristics. Or the items on a questionnaire may induce a certain kind of response bias. Here, there are so many layers that are coming to bear on a person's experience, if they just enter the hall. And in a Tibetan Buddhist context, the role of the guru, and becoming the guru, and deity yoga, occurring simultaneously with this as-advertised "non-religious" project, turns out to be quite complicated from an anthropological view, a sociological view.

[\(00:50:26\)](#) – *musical interlude* –

Cliff Saron ([00:50:50](#)): So, a few things that we found. One of the first papers we published in Psych Science, first author was Katherine McLean, was that attention, sustained attention, in terms of vigilance, appeared to improve, which is what we hypothesized. But what's really interesting is that we made a very boring task. You just had to tell whether a line was a long line or short. And we made the short line right at your visual perceptual threshold. We'd set that for each person individually. So 25% of the time, you couldn't tell.

Wendy Hasenkamp ([00:51:34](#)): Okay. So for each person, before you do the task, you test, whether they can discriminate between the length of two very similar lines... Like, is this one a tiny bit shorter than that one, or are they the same? And this ability to discriminate differs between people. So for each person, when it gets to a length that they're only correct 75% of the time, that's the length that becomes the short line for them, for the task. So it's really hard to tell?

Cliff Saron ([00:52:04](#)): Yes. Right.

Wendy Hasenkamp ([00:52:06](#)): And then during the task, they just have to press a button every time they see the short line versus the long line. Is that right?

Cliff Saron ([00:52:13](#)): Exactly. And the short target line only happened 10% of the time. So for half an hour, every one or two seconds, you're getting a line, only 10% of the time you're supposed to push a button.

Wendy Hasenkamp ([00:52:26](#)): For the short line.

Cliff Saron ([00:52:28](#)): For the short line. And the short line is barely perceptible. And we adjusted the length of the line at the pre, mid and post time point. And at the end of the first retreat, we didn't find any improvement in these folks who did a 900-hour intervention.

Wendy Hasenkamp ([00:52:47](#)): Hmm. After three months.

Cliff Saron ([00:52:49](#)): But we did notice that their visual perceptual threshold systematically improved. So we were actually making the task harder along the way.

Wendy Hasenkamp ([00:52:58](#)): Because you kept adjusting the length.

Cliff Saron (00:52:58): Cause we kept adjusting it. So we then in the second retreat, we fixed it at the pre [length]. And then there, we saw improvements in vigilance across time, for pretty much in the first 15 minutes of this 30-minute block. But that begs the question, was attention better or was perception better? And how our perception and attention interleaved? Or did working memory improve, so that you could hold on to the sensory trace of that short, last time you saw a short line, or the template that was developing of what incontrovertibly is a long line? So you begin again to think about the simplest of these tasks and how complex and cognitive, so to speak, they are.

(00:53:58) So that was one and finding and just in, I think 2019, Tony Zanesco was first author of a paper of the electrocortical activity associated with this kind of a task, from brainwave evoked potentials. And he showed the systematic improvements in this sense of electrocortical signs of vigilance, in the Journal of Cognitive Neuroscience. We took this task and we flipped it on its head. Now we said, "Press the button every time, it's not a target."

Wendy Hasenkamp (00:54:32): The long line?

Cliff Saron (00:54:34): The long line. Every time you see a long line, 90% of the time, press it. When it's the short line, don't press it.

Wendy Hasenkamp (00:54:41): So now it's a withholding of response.

Cliff Saron (00:54:44): Yeah. This is like the Listerine task, the taste you hate twice a day. It is so infuriating, but it is such an interesting task, because you can actually do this task and become aware that you just failed to inhibit. You could see the short line, but there goes the finger. So it's really an interesting task regarding cognitive control, and the separability of these elements of cognition—response inhibition from perception. And the habitual responding, because what is a lot of this, gist making that's wise action, that's compassion, is somehow intimately tied with a capacity to withhold the inappropriate response.

Wendy Hasenkamp (00:55:34): Mm. Interesting.

Cliff Saron (00:55:38): So what we found is we found that people improved in both retreats on response inhibition over time, and the degree of improvement from the pre-point to the middle of the retreat predicted a joint measure of positive adaptive, psychological functioning.

Wendy Hasenkamp (00:56:01): Hmm. Say more.

Cliff Saron (00:56:03): So this is published in the journal Emotion, Baljinder Sahdra was the first author. It suggests that when you look at a variety of validated self-report measures of well-being, of resilience, of openness to new experience, positive personality characteristics, anxiety, depression, things like this, and you combine all of those into a kind of latent construct of adaptive functioning. We notice that this improves at the end of the three month retreat. To the extent an individual improved in this response inhibition capacity by the midpoint, it predicts their improvement across the three months in this self-report measure.

Wendy Hasenkamp (00:56:52): Hmm. So something about the attention or perception or being able to withhold a response is related...?

Cliff Saron (00:57:00): Yeah. Something about the capacity to engage with this response inhibition task and be better at it, in the context of the meditation retreat, is related to your psychological functioning, as indexed by these self-report measures. And Tony Zanesco's published a follow-up—up to seven years we kept giving people this task. So there is interesting data about cognitive aging, older people in the experiment who meditated more, showed less decline over time, in the capacity to do this response inhibition task. So the hopeful interpretation of this relates to improvement in cognitive aging.

Wendy Hasenkamp (00:57:46): Right. And that aligns a little bit, maybe with some other findings you have around telomeres, right? Which is related to cellular aging?

Cliff Saron (00:57:55): In the Shamatha Project, we measured at the end of the three month retreat, the amount of an enzyme called telomerase, that helps repair the shortening of your telomeres. Your telomeres are the end caps of your chromosomes. They're the sequence of DNA, that is the same in almost all mammals. We were measuring them in a particular type of blood cell called a peripheral blood monocyte, a white blood cell. And the amount of this enzyme was about 30% greater at the end of the three month retreat than at the end of three months in the control group.

(00:58:37) But what was really interesting is that it was quite tightly related again, to psychological change in the participants. For people who experienced an increase sense of purpose in life... Folks for whom, their current activities and opportunities and alignments are coincident with their largest goals—that's evidence of increased purpose in life, a high purpose in life. If you're in big transition, you don't know what's happening yet, you haven't manifest a way to get to your goals, your larger goals—that's a lower sense of purpose. In the retreat, the degree to which people's sense of purpose increased, predicted their telomerase at the end of three months. This was published in *Psychoneuroimmunology*, with Tanya Jacobs as the first author. This is in collaboration with Elissa Epel and Liz Blackburn at UCSF, and other investigators.

Wendy Hasenkamp (00:59:46): So that's a really interesting demonstration of the intimate relationship of our minds with our bodies at a cellular level, even.

Cliff Saron (00:59:55): There is a fantastic paper that was published—I believe in PNAS, by Elissa Epel and Liz Blackburn and their group, and Owen Wolkowitz—about decreased telomere length in mothers of kids with chronic illness, a number of years ago. And the commentary by Robert Sapolsky says, "Hey guys, the mind gets down to the nucleus."

Wendy Hasenkamp (01:00:20): Yeah, absolutely.

Cliff Saron (01:00:22): And you asked about telomeres. Telomeres are actually the length of that DNA segment that gets shorter when cells divide, because the DNA replication complex, like a zipper at the end of your coat, the zipper isn't teeth all the way down, you need the little piece of slug for the other part of the zipper that does the zipping, to bind, so to speak. Likewise, you can't copy all of your DNA because you can't copy the place where the DNA replication complex is connected. You just go down. So you need this telomerase to re-elongate the ends of your chromosome, as part of cellular repair.

Wendy Hasenkamp (01:01:06): And as the length of those repeats, of those sections of DNA, the telomeres get shorter, it's associated with all sorts of aging, and negative outcomes, disease, all of that, right? Yeah.

Cliff Saron (01:01:18): Right. It's a proxy for a deterioration of health in a variety of ways, as well as potentially related to longevity overall. (It's a very complex story because not all cells have the same levels of telomerase. If you have way too much telomerase, it's part of a capacity for cells to become immortal, and that is involved in cancer. So, there's Goldilocks ranges of having this right amount of telomerase.) It was also the case, that we found the folks whose sense of purpose decreased at the end of three months... Because you could come into a retreat with all kinds of expectations of where you're going to be at the end of three months, and then at the end of three months, it's you. What is it? Jon Kabat-Zinn's book, *Wherever You Go, There You Are*. So maybe your sense of purpose didn't get enhanced, or your neuroticism didn't change—because it's also inverse. Less neurotic individuals at the end of the retreat also had increased telomerase, relative to people whose change in neuroticism was smaller.

(01:02:31) So we have to ask the question, what about telomeres? We weren't able to answer that in the Shamatha Project. So we actually did a whole other massive study looking at two one-month long retreats at Spirit Rock Meditation Center. Quinn Conklin is the first author of a paper in *Brain, Behavior and Immunity* that describes this study. So the bottom line is we found that telomere length increased in just three weeks at the average level. You know, the average of [the] retreat group compared to a control group that was matched on meditation experience, but not in retreat. When we looked at individual difference measures, what was really interesting is that people who entered the retreat, who were most neurotic—that's to say, they're easily irritable, making sort of mountains out of mole hills—or people who were disagreeable, they had the largest biological increase in telomere length. The least neurotic, most agreeable people, no change.

Wendy Hasenkamp (01:03:50): Oh, interesting.

Cliff Saron (01:03:50): And if you tell this to meditation teachers, they say, "Well, of course." Take someone where people piss them off and you go into a place where not only do you not talk to each other, you don't even have eye contact. You are left alone. Or daily life—the sitter is late, the delivery didn't come on time, you know, daily life travails? You get three square a day, you live by the gong. You're in a beautiful environment. You're not with your family, you're not with your work colleagues. You just care for your self and it's basic needs. You can just breathe easier. So many things can be nourished. Again, is it meditation, or is it retreat experience?

Wendy Hasenkamp (01:04:45): Right. Because it's such a contrived environment, to be on retreat. It's not anything you would encounter in normal life. So it's its own context, for sure.

Cliff Saron (01:05:00): Well, interestingly, retreat experience may come in handy during conditions of lockdown. We're actually doing a study, that Quinn Conklin is in charge of, that involves looking at many hundreds of people and how they're using meditation to cope with the conditions of the pandemic, the stresses of the ongoingness of it. So in this one-year longitudinal study, we have a blood collection at one point in time. Then a year later, we send people another blood collection kit where we can then analyze for telomere length changes. And we, in the interim, and at this one year, and beginning time points, we ask people to who fill out a large number of self-report instruments, questionnaires looking at a variety of individual psychological trait characteristics, as well as inventories of stressors and lifetime adversity, and meditation experience. And in addition, we're asking people to narrate in their own words, how they are using their contemplative practice in the context of coping with the conditions of the pandemic.

[\(01:06:26\)](#) So currently we are in the midst of the one-year follow-up data collection point. And as we all know, and have so much experience at this point, the conditions of the pandemic keep changing. They've also been associated with times of great social unrest, and impacts of racialized violence. And because the pandemic's conditions have been associated with such disproportionate impact on marginalized communities, we felt it really important to recruit as diverse a population, in this study, as we could. In the retreat centers in which we've been working, those populations have been primarily white. And we needed to broaden our capacity and understanding of how to recruit individuals from more diverse backgrounds. So we've actually used this study as an opportunity to understand ways in which our research materials, our presentation of our projects, and the communities that we reach, need to shift in order to become more inclusive. And this has been a transformative process, I think for our entire group.

Wendy Hasenkamp [\(01:08:02\)](#): Mm. Can you say more about what you've learned from doing this kind of work?

Cliff Saron [\(01:08:06\)](#): Sure. So I think that this experience of doing work required to recruit a more diverse study population, has impacted us both personally, and structurally changed the way we regard the culture of research in some profound ways. The first of those ways is to shift us from a position of sensing that we are the authoritative entity that knows how to interpret the results of individuals sharing with us their experience. And we've moved more to a sense of deep collaboration and acknowledgement of the necessity for there to be an ongoing dialogue between the kinds of tools that scientists use to try to answer their research questions, and the lived experience of those individuals they seek to understand better.

[\(01:09:03\)](#) At a personal level, the degree to which my sense of authority has fallen on the rocky shoals of understanding a little bit of how little I actually understand of others. And particularly when we're speaking about the experience of marginalized groups, who have experienced trauma and discrimination and life conditions that are very far from my own personal experience. So, by involving our team with a community of participants and sharing—even before they became involved in the study—our goals and getting to know their questions and concerns, we began to shift our stance towards this entire enterprise of doing human subjects research, toward one of greater intellectual, scientific, and personal inclusivity, independent of the question that we're investigating.

[\(01:10:21\)](#) – *musical interlude* –

Wendy Hasenkamp [\(01:10:54\)](#): So, I've been thinking as we've been chatting, about the difficulties in communicating the nuance of this kind of information, particularly around the research results, to the public. I've heard you just in this conversation, be very careful right about caveats and nuances, as scientists should be. And at the same time, of course, there's a challenge when you get really into the weeds, and sometimes you can lose people who aren't in the weeds with you. So that makes me think about this issue of the media coverage of this kind of work. You and I have both witnessed this arc over the last 5+ years of this type of being covered so much more in the media, and mindfulness, contemplative work, how it applies to people's lives, what the science says about it. I know you've had a lot of thoughts about this type of communication, so I'm just wondering what you think the role of the media should be right now? What kind of outcomes should they be covering? How should they be approaching this, maybe compared to the way that it has unfolded?

Cliff Saron (01:12:10): So I think that the public communication of science often doesn't highlight the distinction between the lived experience of scientists and the craft of doing science, from the caricature of science that comes along with textbook presentations of what are often dogmatic statements, that are taken as delivered truth. To me, more important than simplifying a scientific result for producing a sensation of understanding in the audience, is reaching for a sense of empathy with the scientist, and what they face. And when I say what they face... This life of doing research shares an enormous amount with all creative pursuits, which includes the inherent choices of what to study, with what method, to what ends, within what current worldview.

(01:13:35) There isn't attention on that aspect of a life in science. I think if there was, it would be easier to communicate that our currency is fundamentally clouds of unknowing, rather than firm facts. Particularly in the realm of the human cognitive sciences, and especially in the realm of contemplative science. Because we're studying often an extraordinarily amorphous phenomena. Sometimes I liken it to—imagine you want to know the consequences of playing a musical instrument, and you're giving people violins without any strings. And they're going to hold the violins, and then your job is to assess what is music making doing to these people's bodyminds?

(01:14:37) We fundamentally do not know what movements of mind, so to speak, are engaged in when someone undertakes an instructed practice. We make assumptions about good faith, good will, respect for a conscientious attempt, but over time, one leaves the pavement. You know, this becomes improvisational, it becomes incorporated. The goals are not rigid repetition, but development. And development means what? It's kind of like, I think of *A Giacometti Portrait*, which is an extraordinary book about how Giacometti painted. The writer has sat for him, and he just kept painting over and over the portrait across like two months. He just wasn't getting it, wasn't getting it, wasn't getting it. That is kind of our predicament.

(01:15:34) So we have a culture that is wanting to accept received wisdom in bite-sized pieces, that we can oblige at everyone's detriment, I think. Because unless we say, "Ah, but this didn't happen for everybody, and it happened under these conditions, and it doesn't mean it'll happen this way, if you do the same thing. And it happened at this point in history when people were motivated because of X, Y, and Z, and not in five years because of other contexts..."

(01:16:16) So I always come back to for Francisco's statement in Monte Grande, I think. There's an excerpt from a video that Joan Halifax was interviewing him in 19 ... I think '83, maybe it was '86, I don't remember, where he says, "In its core, in its living core, science is pure contemplation. It has nothing to do with manipulation." And by manipulation, that means application, technology, instrumentality. We're going to prove if you do this training, you're going to get that result. That is not what we are committing our efforts to.

(01:16:59) We're committing our efforts to, if you do this, what do you get? And what does what you get look like in the broad communication of differences, of variability? There's a huge tension between wanting to state the mean effect and the variability. We do not spend enough time talking about the strength of effects, of effect size. You know, if you are going to a gym and you're going to lift weights because of the biomechanics and the biochemistry of muscle, if you work your myocytes to fatigue and damage, they will rebuild stronger. That metaphor is not the same for if you exercise your "brain muscle." But it's used.

(01:17:53) You have to keep also in mind, one of the things the Dalai Lama said in 1990, he said most Westerners practicing meditation, practice dullness. I think Richie in the podcast talked about analytical meditation. When you have a presence of standardized instructions without engagement with a teacher—whether it's an app, or whether it's a video, or whether it's any method published in an appendix of a book—there isn't an opportunity for the nuanced dialogical engagement where someone can say, "Huh, this is what I observed when I did this." Or, "I keep wanting to feel better, but doing this mindfulness business, I actually feel worse." So you stop doing it, rather than say, "Ah, maybe feeling worse is midway to saying, *I feel*." And there's some flux to, is it pleasant? Is it unpleasant? Does it change when I sit with it? I mean, all of this stuff, which is part and parcel of what you would engage with with a teacher is often not accessible.

(01:19:16) Likewise, in the presentation of science with a reporter on deadline with 200 words, for an audience... I've talked to a lot of reporters and I consistently say, "Can you ask your editor for more time?" Or we deal with, "Please put these caveats in," and then the editors take them out, because eyeballs on ads is the metric for success in the print publication. So it's back to what is the level of discourse that is alive in society? And that back to the education system and what are the cultural norms for the realm of ideas?

(01:20:04) And on top of it, scientists have often retreated to jargon and to not considering the stakes. I think there are huge stakes. Because I believe that the communication of the wealth of reality, and its complexity and nuance, can be a deeply connected organic path to meaning in life. I come from this Sputnik generation. You know, in 1958 I was in kindergarten. The Russians had launched a satellite, suddenly space was everywhere—science, physics, the cosmos. Mr. Wizard was on TV, and we lived for this. And there has been a real shift in a sense of public education. Now it's coming back with an emphasis on training people in STEM and legitimating that as a path. And often in that emphasis, there's an unfortunate diminution of the humanities.

(01:21:15) We're living in a, not necessarily better world through technology, from the consequences of social media—the things that were designed to connect us now are the things that are most potently keeping us apart. And we are the product of that machine. Our attention, our sense of autonomy. The conversation about free will gets really interesting when you think about likes on Facebook, or views on Instagram, and the illusion of autonomy in saying, "Yes, that's what I want to see next," where the algorithm has provided you with what it calculated you would want to think was what you wanted to see next.

(01:22:06) So, I think it's an incredible challenge to make this gesture, this communicative gesture, that causes someone to go, "Huh, I actually do think about large philosophical issues, but I don't call them that. I do wonder how much of my aspirations are the product of conditioning. All of this cultural impact on what is my formation, can at moments be glimpsed as the water I'm in..." There are gaps in everyone's experience, I think, where there's a higher order question.

(01:22:50) In the context of immediate, acute suffering, there is a need, often, for a framework that someone can hang simple understanding on. That can move them off self-hatred and self-condemnation, and provide a way of externalizing their immediate circumstance into an explanatory framework that doesn't put it all on them. That process is necessary, and it's fraught. Because one needs to, at a calmer moment say, "That was helpful to you, then. You should know that that was like, a little toy explanation." But we are all embedded in toy explanations of one kind or another, and we function on the basis of iterative refinement of models that are always going to be models of how nature is. So in

that sense, the conversation can be about where can we move the set point for the sophistication of the models, so that maybe new thoughts arise?

Wendy Hasenkamp ([01:24:13](#)): I love that. I really appreciate how you're always a champion for the mystery. And you really shine a light on the interdependence and complexity of all the systems that we find ourselves of embedded in, and that we are (whatever we call a self, anyway). We haven't even touched on that, but... Yeah, which is the true reality I think, of this complexity. And then the acknowledgement that all we have, in some ways, are stories, and these shorthand ways of the making sense of it. You said the gist, getting the gist, the gist making, which I love. I think the key just being to be aware and acknowledge that these are the stories and the gist, and still keep an eye on that mystery and complexity.

Cliff Saron ([01:25:35](#)): Yeah, I agree.

[\(01:25:35\)](#) – *musical interlude* –

Wendy Hasenkamp ([01:25:39](#)): Well, this has been so fantastic and I wish we had more time. I really appreciate your generosity with your time. I think just in closing, I'm wondering if you have—looking back over your arc of experience in this domain—big picture take-homes, or lessons learned, or anything you want to share with the audience from your perspective?

Cliff Saron ([01:26:02](#)): So, I think one of the things that I want to touch on is that this perpetual bend in the river of my life, that Mind & Life has helped foster, continues. And one of the opportunities that I was afforded that helped coalesce how all of this lands for me, was a remarkable meeting I had the privilege of being part of organizing and attending in Botswana on Ubuntu and Botho, this indigenous African notion of what it is to be a human through our relations with others. Desmond Tutu has popularized it, "I am because you are." A person is a person through persons, is another way of saying it.

[\(01:26:54\)](#) And this view I've heard represented through multiple indigenous traditions, of deep acknowledgement of our embeddedness with each other and with our world, our physical world, the Earth. And it makes perfect sense that, under circumstances where we are dependent upon each other for survival—which we've gotten so far away from having that as immediate experience—that the true connections that we have with each other that are often not conscious, not palpable, are the things that define who we are.

[\(01:27:41\)](#) So, in understanding what we bring to the world, as the collection of loves and influences and connections that we are, we have an enormous individual responsibility. This is the tear-making moment of this moment in cultural history and in physical history, in the Anthropocene. How we choose to spend our time, the resources we consume, as Matthieu Ricard says, the "heart print" we bring forward, is of enormous consequence. And we are not good at seeing that enormity, because we seem not to be able to see all of our embeddedness. So we foreground our embeddedness, then we can think about how the ramifications of actions ripple in the world.

Wendy Hasenkamp ([01:28:55](#)): Thank you, Cliff. I so appreciate you and all that you bring to this field. This has been a joy, and I hope that we can continue the conversation, because there's clearly so much more to chat about.

Cliff Saron ([01:29:08](#)): Thank you so much. And it's really been just a delight, a total delight, to spend this time with you in inquiry together, Wendy.

Outro – Wendy Hasenkamp ([01:29:22](#)): *This episode was edited and produced by me and Phil Walker. Music on the show is from Blue Dot Sessions and Universal. Show notes and resources for this and other episodes can be found at podcast.mindandlife.org. If you enjoyed this episode, please rate and review us on Apple Podcasts, and share it with a friend. If something in this conversation sparked insight for you, we'd love to know about it. You can send an email or voice memo to podcast@mindandlife.org. Mind & Life is a production of the Mind & Life Institute. Visit us at mindandlife.org, where you can learn more about how we bridge science and contemplative wisdom to foster insight and inspire action towards flourishing. There, you can also support our work, including this podcast.*