



Mind & Life Podcast Transcript

Peter Wayne – Ecology of Mind

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Opening Quote – Peter Wayne (00:05): *The heart of this work is how things are really interconnected. What makes a birch tree successful in a hole in the forest has to do with so many interconnected things—light, temperature, humidity. And one could make a parallel about health. And I think health, more and more to the integrative medicine and health community, is emergence. Health emerges out of all of these organ systems interacting into an orchestra. And that way of seeing has translated a lot to the approaches we take in studying mind-body practices and contemplative practices.*

Intro – Wendy Hasenkamp (00:45): Welcome to Mind & Life. I'm Wendy Hasenkamp. My guest today is clinical researcher and internationally recognized tai chi teacher, Peter Wayne. Peter is the Bernard Osher Associate Professor of Medicine at Harvard Medical School and the director of the Osher Center for Integrative Medicine. He's also the founding director of the Tree of Life Tai Chi Center in Boston. In his research, Peter studies how and why mind-body and contemplative movement practices affect aging and chronic health conditions.

(01:17) But Peter's not just your run-of-the-mill clinical researcher. He's got a PhD in evolutionary biology, and he was trained to study trees through an ecological lens. This background gives him a unique perspective, as you'll hear, on how biological systems are interwoven and dynamic, and can't really be studied in isolation. This frame has made his research efforts unusually holistic and integrated.

(01:44) In our conversation, we explore a lot of these ideas. First, Peter describes his ecological background, and we get into embracing multiple lines of causality, and how to do non-reductionist science. We talk a good deal about the mind-body system, the essential role of the body in thought, emotions, and health, and what it would look like to collapse those terms—mind and body—into one unified construct. He talks about harnessing the wisdom of the body through contemplative practice, trauma and safety in the body, and the relationship between physical and emotional patterns, and how we work with them. We explore how the Eastern concept of subtle energy relates to Western views of the body, and Peter shares his thoughts on the role of integrative medicine in dealing with climate change.

(02:35) I feel so fortunate to know Peter and have been able to practice with him from the many years he's taught tai chi at the Mind & Life Summer Research Institute. It's always been a highlight of that event for me. He's truly a gifted teacher. And we're thrilled that he'll be teaching again with us this year. And we're making this year's SRI available to anyone online. The topic is The Mind, the Human-Earth Connection, and the Climate Crisis. It's going to be awesome, and you can learn more and register at mindandlife.org. Just look for the online speaker series.

(03:08) As I think you'll hear from this episode, Peter's knowledge and experience is extraordinarily deep, yet he speaks in such clear and accessible ways that he makes these ideas come alive, both cognitively and in the felt sense of our bodies. Overall, I think Peter represents a lot of what's at the core of contemplative science. He brings together multiple perspectives to investigate the mind with a deep sense of how our minds extend both throughout our bodies, and into the world. It was truly a joy to speak with Peter for this episode—I hope you enjoy it as much as I did. It's my pleasure to share with you Peter Wayne.

Wendy Hasenkamp (03:49): I'm here with Peter Wayne. Peter, thank you so much for joining us.

Peter Wayne (03:53): Wendy, it's my pleasure.

Wendy Hasenkamp (03:54): I would love to start... I often like to begin with some background framing of the perspectives that that guest is bringing. And I think you bring such a particularly interesting mix of perspectives to your work. I always think of you in the contemplative space as studying embodied practices, and specifically tai chi and Qigong, and mind-body interventions. But I know you were also trained as an evolutionary biologist, and did a lot of work in ecology and climate before that. So could you take us through kind of how your interests were developing and being shaped over that time, and just your path so far that's gotten you here?

Peter Wayne (04:34): Yeah. So my path has not been a linear one, like I think many people that we all work with. They have different backgrounds that make sense in the rear-view mirror, but along the way, there were forks in the road that took us to where we are. I grew up really loving science and math, and so I went to a science and math high school, and was drawn to nature and evolutionary biology. And I did my PhD in evolutionary biology of photosynthesis in birch trees, and how that what you might call "feeding behavior" during the day influenced their ecological ability to occupy different niches. After doing that for about six or seven years, it interacted a lot with climate change research. We were interested in forests as sources to absorb carbon from the atmosphere, so I became interested in climate change.

(05:27) But the heart of this work is how things are really interconnected. What makes a birch tree successful in a hole in the forest has to do with so many interconnected things—light, temperature, humidity. And that way of seeing has translated a lot to the approaches we take in studying mind-body practices and contemplative practices.

(05:50) Early on, the other parallel root that connects these things is I became very interested in high school, as a young teenager, in Chinese philosophy and sports, and martial arts in particular. And that's where I started my study of tai chi. And that's always been percolating in the background. It followed me through college, through graduate school. And when I moved to Boston to begin graduate school, I opened up a tai chi school here. And somewhere around the year 2000, I realized I wanted to bring these two interests a little bit closer together, so I took my training and experimental research and biology and evolutionary biology, and I brought it together with my training in traditional Chinese medicine and tai chi, and that's the beginning of this era of my research.

Wendy Hasenkamp (06:37): Yeah, I love it. So can you give an example, or talk a little more about how you bring this kind of ecological frame into mind-body research?

Peter Wayne (06:48): Yeah. One of the first studies that actually drew me out of doing evolutionary biology. I remember sitting at my desk and getting a phone call from a group at the Harvard Medical School, which turned out to be the Osher Center, which is where I am now. And they said, "We're starting a tai chi study, and we understand you have some experience, and you're a scientist. Would you be willing to interact?" And it turned out to be a study with my colleague, who's now our research director, Gloria Yeh. And it was a study of tai chi for people with very serious and late stage heart failure, very ill people, some of them waiting for a heart transplant. And our pilot study—it was a small study with 30 people, a randomized trial—showed very provocative results. We not only showed improvements in exercise capacity and quality of life, but even proteins that are assays of heart stress, natriuretic peptides. And some of the editorials that came out said, "This is interesting. But how do we know this isn't just all placebo? What is the active ingredient?"

(07:52) And that question, I remember being asked that, led me to think, "Wow, in medicine do you only get to pick one active ingredient? In ecology, there's a lot of active ingredients, and they're all interacting with each other in a very ecological, complex way." So that led us to creating a framework for studying tai chi, which later we called the eight active ingredients of tai chi. But it articulated that obviously movement, but lots of cognitive processes, breathing, social interactions, context, all are important in an ecological way. So that's an example of how that thinking from studying plants and nature translated into the conceptual model we use in our research.

Wendy Hasenkamp (08:35): Yeah, that's really helpful. I feel like also when I was beginning in the contemplative science space, and I was focused more on sitting practice of meditation, but it was coming out of the medical model, and it was the same exact conversation of: What are the active ingredients here? Just like you would study a drug or something. And I think the field has increasingly come to realize just the perspective that you show, that there are many factors playing in, and some of them are what's going on in the individual, and some of them are interpersonal and the social context, and potentially even the physical context, and all of these things. So I think that's a really important thing to keep in mind for this field. And I feel like, I hope, it's becoming more accepted. Have you had a sense of a shift kind of in that ways it's being viewed?

Peter Wayne (09:23): Yeah. I think the shift is happening for two reasons. One, I think the science underlying the efficacy and the effectiveness of these practices, as well as the basic biological nature—that there's plausible mechanisms—has grown. But at the same time, I think what we would call conventional medicine is evolving. I mean, they've gotten more and more atomistic and reductionistic, looking at molecules and genes, and all sorts of very small components. But where it's brought them is to realize how interconnected all those processes are. And so in some odd, almost yin and yang way, the deeper they've gone, the more they see the connections.

(10:04) And so when we look at especially complex poly-morbid conditions, let's say high risk fallers in older adults, it's not due to one thing. And there's no one pill that's going to fix it. High risks of falling involves movement, it involves emotion and fear of falling. It involves cognition and how you pay attention to your body. It involves the environment that you live in. Is it safe? Is it well lit? And so I think at the same time, people have been mining the richness of these traditional practices, they've been finding the same biopsychosocial holistic models on their own. And I think this is really exciting, and I think it positions integrative health and integrative medicine to make some great synergistic strides together with the current medical paradigm.

Wendy Hasenkamp (10:55): Yeah. Part of that is making me step into this more philosophical realm, of how we view and try to understand causes and causality. And how we often are just looking at the most proximate cause, or we want it to be one single thing. Even in a political landscape, for example, or the kinds of social issues that we are wrestling with right now, it's very natural to try to point a finger at, this is the one reason why this happened. But in fact, it's becoming more and more apparent, I think, that there are so many reasons and so many layers. Look back at history, and for example, the history of racism in this country has led to so many injustices. So I'm just... I don't know how that fits into what we're talking about, but it just seems like a much bigger picture.

Peter Wayne (11:48): Well, I see it. I see where the heart of what you're asking is really important. We, in our reductionist model, we like this sort of gear system—of this gear turning causes that—this very direct, simplified causal arrow. And in some cases, you fall down and break a bone, you have this proximal association. But it was interesting, I know that you've done an interview with Evan Thompson. And Evan Thompson's been a great friend and colleague, and such an important force at Mind & Life. And I had the opportunity of writing a paper with him a few years ago about embodied cognition and posture in tai chi. And what was really striking was at the end of it, we went and looked through the paper, and every place that there was the word "mechanism," Evan suggested we replace it with "processes." And that was really striking to me. And we had some discussions about that, and he said, "Sure, executive function may be an important aspect of preventing falls. But it's not necessarily a mechanism. You don't know, because it's a process embedded in many-layered systems with other processes interacting."

(13:03) And so that leads more to, as opposed to this additive or causal model, more one where emergence happens. And I think in his writing about embodied cognition, one could make a parallel about health. And I think health, more and more to the integrative medicine and health community, is emergence. Health emerges out of all of these organ systems interacting into an orchestra. And good health is when there's rich crosstalk and biofeedback loops and resilience. And bad health is when you have breakdown between these interconnected systems. And that's what happens with aging. Your hearing gets a little weaker. Your sensation in your feet gets a little weaker. There's less information cross-talking in the system.

Wendy Hasenkamp (13:52): Interesting, yeah. And has this view changed the way that you think about approaching science as a practice? Because a lot of science is inherently reductionist, right? And you're trying to control all the variables, and just change one. But with this view, you're really trying to understand all these factors, like for example, the eight factors that you said about tai chi. So do you try to study them each, quantify them individually? Or how do you approach that?

Peter Wayne (14:22): That's a great question. And it's a balancing act. I will say one of the great things that's happening right now at the National Center for Complementary and Integrative Health—which is now under new leadership of Helene Lengevin, who used to be the director of our Osher Center and a long-term colleague and friend—is this movement towards this more ecological model, to go beyond individual organ systems. And if you think about how NIH is organized, you have the heart institute, you have the neurology... And it really is these silos. But we know that health requires understanding of how these different systems interact.

(15:00) So there's a movement now in their new strategic plan, which is coming out, to talk about whole person health, and to go beyond these organ-based views. So I think they themselves and us are thinking, "How does that change the questions we ask and the way we conduct our research?" And one

of the challenges in clinical research, as you know, Wendy, is: What's your primary outcome? And you power the whole study around one specific physiological or clinical measure.

Wendy Hasenkamp (15:31): Right. And "power" meaning, how many participants you recruit and things like that. Right?

Peter Wayne (15:36): Yes, statistical power. And that's valuable if you want to answer a very specific question. But when you impose this big intervention—meditation, tai chi, lifestyle and nutrition changes—yeah, you may change a marker of diabetes or blood pressure, but you're also changing the whole person. And so one question that I think we're starting to ask is: Are there measures of the whole person that are important to look at, in addition to the very specific physiological measures?

Wendy Hasenkamp (16:10): That's a really deep question. Are there measures of the whole person?

Peter Wayne (16:14): Well, there are questions about quality of life. There's questions about meaning. We're interested in not changing just symptoms and the markers of disease, but how people experience their life, the quality of their life. So there are measures of quality of life... There are some really interesting measures around embodied wellness that are coming out from the interception research. Is my body a safe place to be? Do I feel at peace living in my body? Those are profound experiences, even for people with terminal illnesses.

(16:51) So I'd say in terms of how we conduct the research, in addition to asking what the outcomes are, what we use as control groups is a really tricky thing. Is there placebo tai chi? (Some people will think that the tai chi I teach is placebo, it's not very good or real.) *[laughter]* But it's still tricky because even the most psychosocially obvious variable... For example, in a drug trial, the person administering the drug doesn't know whether it's the real drug or the placebo. And so they're inert. In theory... but we know now that patient-practitioner interaction is huge. But in a drug trial, you can make them pretty neutral. They act the same way since they don't know. But the teacher in a meditation intervention, or a tai chi class, or an exercise class, is not inert. They model it. They inspire. They have to embody it to teach it well. And so even just controlling for social attention becomes really a tricky question as we design these studies that have more of an ecological impact.

Wendy Hasenkamp (18:10): Yeah. This exploration is also making me think of something that I feel you've really done a great job of bringing together at a conceptual level—the idea of mind and body. And I think I remember you even presenting at the Summer Research Institute once, and you had a slide that just said "mindbody" as one word, with no space, and no hyphen, which is how we usually see it. So just saying that we shouldn't even distinguish these as different words, or constructs. Can you say a little bit about how you view the mind-body system?

Peter Wayne (18:41): I can, but I feel the more I explore this, the more ignorant I am. And I'm not trained, as I said in the beginning, I'm trained from studying trees, and in empirical exposure to this. I'm not a philosopher, or a cognitive neuroscientist, or a contemplative scholar. But I do see this extreme bias towards this split that we all fight against, Descartes' split—I think, therefore I am—or the mind and the body. And there's good research... and the work that Evan and I have put together, and many others are working on in the field of embodied cognition and embodied wellness. How we move deeply affects how we feel and think. And how we think deeply affects how we move. And to bring that to a very specific example, going back to falls... If you watch how an older person who's had a history of falls moves through an environment, you can see the anxiety in the way that they hold their chest and neck.

There's a guarded sense. There's always a vigilance and a fear of falling. They're distracted, maybe monitoring their environment and less aware of where they are.

(19:59) And so, one does not need to scan the amygdala to see fear. And the question is: Does fear start in the amygdala, and tell the physical body what to do? Or can you create an experience in the flesh that influences our perception and our experience? And I think it's dialectic. And so I, in many ways, have been conceptually moving towards removing that hyphen.

(20:28) – *musical interlude* –

Wendy Hasenkamp (21:02): You've already spoken some about this, but I wonder if there's more you want to say about the wisdom that is in the body, and the value of embodied approaches for health and wellness.

Peter Wayne (21:15): Yeah. One of the ways we start our tai chi classes and our clinical trials, but often at Mind & Life as well, we just check in. And we could do a scan with our head, or our mind, whatever we call that. Again, the language, I even get tripped up in. But we can also start by just standing and starting to shift our weight, and just letting shift happen. Not moving to get anywhere, but moving to feel the pieces of their body, of our bodies, and where there is and is not interconnections. So you start shifting, and you go, "Oh, parts of my feet are online right now. I have some awareness of them, some sensation." But there are some nooks and crannies that aren't. And maybe through rocking and use of movement, metaphor, imagery, we might remind people that they're made of liquid, and there's this warm ocean... And just feeling an experiencing themselves as a liquid body may change how much of their wholeness they can feel in the connections.

(22:22) And it's profound because within about five or 10 minutes, we've scanned the whole body, and it gives us a different sense of ourself. Oh, it does feel good to have a connection from my foot through my knee, my thighs, my belly. There's parts of my back that are shut down. The left side of my shoulder's not here. But it makes us aware of ourselves in an embodied, somatic way. And I think that's a very different way of experiencing ourselves from just a thought form. It anchors us and it gives us some tools. And it allows us to watch our emotions from that more visceral framework. And so it's a different way of experiencing and living in the world. And so I think these practices have brought me to questions I haven't been trained to answer yet, so I find colleagues to interact with.

(23:18) But going back to one of your questions earlier that loops back to this, which is: How has your ecological thinking or these questions you're asking, led to your experimental approaches? One of the ways, which I think has really been a strong piece of the Mind & Life community, is first-person narrative. And so in some of our studies—for example, we just finished a study of breast cancer survivors with chronic post surgical pain, their experience of the cancer journey, taking them apart, labeling as BRCA2 gene person, going through radiation, having pieces reconfigured, their self image, really made them question their trust of their body. And their narratives, we can measure depression, we can measure anxiety. We even measured posture and embodiment with quantitative instruments. But hearing what they said in their own words was profound. And they could articulate things that we can't measure, quantitatively.

(24:25) And some of those were, "This diagnosis and the journey through treatment really increasingly made me mistrust my body." This is, and I'm putting my own words in here, it's like Humpty Dumpty being put back together again. "This Qigong practice in a group of women who've all been on the same

journey has brought me back into my body. I appreciate how mind and body work together. And it feels like a safe place, and I've regained my trust in my body." It's just profound to hear that. But it's just... For me, coming out of quantitative measures of photosynthesis, and gait, and everything we can measure physiologically, I still value all that. But there's something about the first-person narrative that creates a very rich, deep context to interpret all that, and becomes important, if you can call it data, or information, on its own.

Wendy Hasenkamp (25:24): Yeah. Yeah, I really appreciate that. It's almost like, what's coming up for me as you're talking is, it feels like that first-person narrative can almost be part of that more integrative perspective. Right?

Peter Wayne (25:38): Yeah.

Wendy Hasenkamp (25:39): Yeah, you're not breaking apart the individual pieces. It's at this higher level of integration that you're able to express that. That's interesting.

Peter Wayne (25:47): Yeah. And I think we have some great physicians at the Osher Center, and their emphasis is on listening. And they want to meet people where their distress is, and that's where healing for them is, to help them with their distress. They can change their numbers. They can suggest things to manage symptoms. But real healing for them is: Where's the distress? And so I think we need to listen at that level, and not be so certain that the things we're going to measure are the most important ones.

(26:22) We just did another study on COPD, and we're obviously trying to help people have more capacity and quality of life. But the narrative work in there led to this whole insight into the shame of breathlessness, and how shameful it was for people to be out with their friends and not be able to keep up. And had we not asked them these stories and probed deeper and deeper, we would've missed this whole rich construct.

Wendy Hasenkamp (26:53): Yeah. That is really rich. Some of the things that you've just mentioned about people being able to feel safe in their bodies and the importance of that kind of integration, and really safety as a core construct, is making me think about trauma and how various kinds of trauma are held in the body. And I also feel like there's a shift that's happening now—when I was trained in neuroscience with kind of a psychiatric bent, trauma was capital-T trauma. And we only thought about it as really severe, significant events. And there was actually a list of these kind of "traumatic events." And I think there is an expansion happening in our understanding of what constitutes trauma to the body and nervous system, and that it is actually "little-t" trauma—relational traumas, developmental traumas, societal injustices—all of these things that many of us are exposed to and accumulating in our bodies. I'm just wondering your perspective on that, as someone who works so much with the body, and how you've come to view trauma.

Peter Wayne (28:02): I think those are really important questions and observations, Wendy. And I agree, I think all of us go through lots of micro-traumas, and some of us, bigger ones as well. At the very simplest level, we can—and I use these metaphors to bring people into observing, and to observe without trying to force a change or judge it—we've all banged our shins. And that hurts. And sometimes, we bang it and it doesn't fully resolve. Things get glued up. The tissues get glued together in this fibrosis. But even when it heals, sometimes we have the memory of that. Similar with back pain. And so there's a great phrase that we use in movement and mind-body movement is kinesiophobia, this fear of movement. And even after the tissue itself has been healed, there's still the memory of that. So we may

walk in a guarded way. And guarding has evolutionary benefits—it protects us from re-injuring something before it's fully healed, or creating more injury around something that's weak.

(29:10) So guarding is good, the problem is: After things have healed, do we still carry those embodied cognition stories with us? And so banging one's shin, or hurting one's back, is a really good example. And so as we move, we notice where there's freedom, where there's not. Sometimes after moving, the body is really awake and we can notice where blood is flowing, or where there's life vibrating around there. It's quite palpable, as you've experienced in doing this work. But we're also, with a sort of curious non-judgment, noticing where we don't feel that. And we can create some presence around that and say, "Are you willing to join in? Or are you holding back?" And if you are holding back, maybe there's a really good reason to not let my knee go because it's not ready. But maybe in this very safe moment, with the support of the surrounding tissues and the fact that you're not challenging it physically, it's willing to let go.

(30:09) And so through this mind-body work, we get to feel places—where we're awake, where we're not awake—and then see that map in a different way, and invite pieces that have been fragmented off to reintegrate into the whole. But it has to be done with so much respect and patience and kindness, even within oneself. A lot of my students in our community-based classes are therapists. And when their client comes in and sits across from them, they don't say, "Okay. Remember that really intense issue? Let's really drill into that today." Rather, they'd say, "How are you coming in today? Where would you like to begin?" And they just kind of wait at the edge for a softening. And I think a lot of these practices, if they're done effectively, have that sense of learning how to collaborate with ourselves with respect and judgment. And that's really hard. Sometimes it's hard for us to have that... For me, I can speak to that empathy, that kindness, that understanding for others. But it's even harder to do it for ourselves. But here, we have a physical practice that grounds it.

Wendy Hasenkamp (31:28): Yeah. And how you just described that feels really exactly like the way I've heard it described, but on an emotional landscape. So you were just talking about the physical body. But do you view it as the same process in working with our own emotions and kind of internal emotional, mental patterns? It feels exactly the same.

Peter Wayne (31:53): I think they are. And I think they're one and the same. I think the language I would typically use in a group has a bit more of a somatic thing, like feel your abdomen. And feel where you can feel, feel where you can't feel. What's in that unexplored space? And can you just kind of lean into it a little bit? And we do that in the pelvis. We do that in very intimate places in our body. And I think it's implicit that that "holding back" is not just physical.

(32:27) In some of the later practices, very similar to the Buddhist training, we take elements of traditional Chinese medicine that are associated with different organ systems, and we'll sit with grief for a while with the lungs. We'll sit with anger in the liver. We'll sit with sadness, et cetera, fear in the kidneys. And I think to me, I typically don't do that work right away. I think people have to both feel comfortable in their body physically, they have to feel comfortable with the group. And then we sort of just kind of gently... And even there, it's very respectful and playful, and you're not forcing change. You're just feeling really brave to be living at the edge.

Wendy Hasenkamp (33:14): Yeah. Part of what we were just talking about and the relationship between working with the physical body, and then that almost flipping over to be able to work with the emotional space, is making me think of Cathy Kerr's work, who... You were just awarded the Cathy Kerr

Award for Courageous and Compassionate Science, so congratulations, and well deserved. And I know that Cathy was a dear friend and colleague of yours. So she was developing this whole theory before she passed about how mindfulness, working with the body and the breath and we often start in these physical spaces and tracking bodily sensations, and how that same kind of capacity can then translate, basically, into our ability to have less stickiness around emotions, or rumination, for example, or being able to notice and let go of things. So, anyway, just throwing that out.

Peter Wayne (34:11): Yeah, no. I think it's so obvious. I mean, I remember even teaching this 30, 40 years ago about the links between body, mind, and breath. But [breathing rapidly and labored to demonstrate] a young person having an emotional experience, obviously, there's a link between the breath, the body, and the emotions. It's there. We're doing a fun little experiment now. There's a big movement across the hospitals, which I think has been further highlighted with COVID, about the wellness and stress of healthcare providers. It's such an important thing, and we're starting to realize the epidemic of depression and anxiety and often, sadly, suicide, in this population. But also, the need to teach tools, to give tools to help resilience and wellness. It's interesting that many of the wellness initiatives have focused on more top-down emotional regulation and cognitive skills and lifestyle planning. And so we have one of the first wellness studies for chronic neck pain in nurses. And I remember introducing this to one of the wellness directors, and they said, "We don't really think about chronic pain as related to wellness." But obviously, if your neck is always hurting, there's a reduction in wellness.

Wendy Hasenkamp (35:36): That's huge, yeah!

Peter Wayne (35:38): So this is a fun little project, a practical one, because I send a lot of my tai chi students to people who do manual therapies—massage, rolfing, chiropractic. And these practitioners send me their patients as well. And so this is a study combining a course of 10 chiropractic treatments plus four months of tai chi training that happen together. And the hypothesis here is that the internal work, the self work of becoming aware of your body, will make a big difference in how you carry yourself, and obviously help with mobility and reduce pain. But it also makes you more receptive to the treatments you get from the chiropractor. And the mobility you get from the massage and the chiropractic adjustments allow you to appreciate your own mobility.

(36:24) But the link, going back to this cognition piece is, we're also interested in whether this changes their ability to deal with complex tasks without medical errors. So if you're not in pain and you're feeling pretty good, because if you think about it, for me, I get stressed, my go to place is my neck and shoulders. They seize up. But the converse is not clear. If we clear out all that junk, and we feel like the head floats, and we can breathe differently, when we're faced with a stress, is it as sticky? Or does it just repel because the system is no longer weak in its links? So I think this is a way that we're sort of touching where I think Cathy was going. Through changes in what we would call the body, do we get less sticky with emotions in the mind?

Wendy Hasenkamp (37:16): Right. Yeah. I'm also wondering, because you've spent so long studying Eastern systems of the body and Chinese medicine and things like that. And a couple times, I've talked on the podcast with folks about the subtle body and the energy body, that comes from Eastern philosophies. And so I'm wondering how you view that and incorporate that into your Western medicine approach. And also, is there advancing research on how the subtle body maps correlate with what we understand from the Western systems of the body?

Peter Wayne (37:58): That's such a rich question, and it is something that interests me. And I'm going to answer it in two ways. The first one is, for years now, I can present my research on mind-body connections as cognitive-motor interactions. And I can talk about all the things about tai chi without using words like chi or energy. And that's... I think it's useful. We're trying to build bridges between different cultures and communities. And so I have no problem with that.

(38:28) We're also interested in what these different comparisons between cultures, what we learn at the edges, can teach us. And so I'm still continuing quite a bit of acupuncture research. I have one student that's following up a question that Helene Langevin and I asked in a paper called What's the Point? And it's about acupuncture and not knowing what this map means. We know from good data now, especially for pain, that acupuncture is clinically valuable. It reduces pain and suffering, and its effect sizes are real, and it's even robust against placebo needling in research. But we have no idea why—what an acupuncture point is, what a meridian is. And so we have, one of my students is doing some interesting work on a neuroinflammation model. And there's some theories that some of these points, there may be dermatomes that connect to organs. So when the organs—in this case, we're using an irritable bowel disease—when people with irritable bowel come in, are points that are associated with those nerve pathways, which also overlap with acupuncture points, more or less sensitive? And so we're starting to do that.

(39:45) But there's a really interesting, provocative set of research coming out of a lab in Boston, by a scientist, a young scientist named Mike Levin. I believe he's at Tufts Medical and Dental School now. And he's been working with things like flatworms and frog regeneration. And he can do all sorts of genetic manipulations. And one of the things that he's proposing—and there's some really good podcasts that be seen and very high level publications that are really rigorous research—is that they can manipulate the electric field around developing organisms, and have them make two heads, for flatworms, or one. You take a flatworm and you cut it up into pieces, each piece knows how to create the rest of it. But if you change the electric field around that, the morphogenetic field, this higher level, I don't know if higher level, but this more subtle body, as you used the word, shapes the ontogeny, the morphogenetic development.

Wendy Hasenkamp (40:51): Wow.

Peter Wayne (40:52): And they can even manipulate genes to turn that on and off. And regardless of what you do with the genes, this is a level of information that is independent of genetic and epigenetic unfolding. And it's very new research. It's just come out in the last couple years. He's got a position at the Wyss Institute [at Harvard]. He's really recognized as a leading edge scholar. But I think that there's some richness there that we are starting to understand from a biomedical perspective. And I would say that when we do our practice, going back to: Where do you feel flow in your body? Sometimes you can even feel a little bit of vibration off your body, this subtle body. Where are there gaps in there? And I think if we fix those gaps, those then cascade down or reduce down to changes at the more physical and biological level.

(41:47) – musical interlude –

Wendy Hasenkamp (42:04): I know you've also, in a kind of interesting circle back, you've been thinking about how integrative medicine can be relevant to climate change, and how we respond to climate change, bringing back your environmental roots. Do you want to say anything about the way that you're thinking about those links?

Peter Wayne (42:25): Yeah. We had a program manager who was really committed to understanding and making a difference for climate change. And so we started having some discussions. And I feel like she brought me out of retirement for my interest in that. And we wrote a small article, which really got me thinking and got us thinking. This is Aterah Nusrat. And at the very fundamental level, we as humans are such a huge part of the global ecosystem, but hospitals too. So it started at the most obvious level. What's the footprint of a hospital? And if you look at the data, I forget the exact numbers, but the healthcare industry contributes something like 15% of the carbon budget of the planet. They're huge machines, the healthcare industry. Even just thinking about all the resources that are driven into and out of the hospital, and so there's a lot of movement now trying to make hospitals more green and minimize their footprint. And that's happening across the Harvard hospitals. And we had some really nice discussions with some of the leaders in that area as we were writing our article.

(43:35) But then there are simple things, like if you take care of yourself a little bit more, if we do a little bit more prevention and a little bit more self care, then you go to the hospital less. And then there's simple models that say, "If you ride your bike half the time that you would be driving your car, not only are you burning less fossil fuel, but you're less likely to go to the hospital, so you impact the carbon models in multiple ways."

(44:02) And then I think we kept going further and further down, and I do think that based on work that you and others have done, and in Mind & Life, as we do these practices, we feel a little bit more porous, self and other starts to dissolve, our ability to have empathy for other organisms and compassion. And I think that there's a way in which the more we care for ourselves and see ourselves as part of something bigger, the less likely it is for us to act in a way that doesn't take into account the rest of the environment. And so I think we came up with this phrase, "Think globally, but act extremely locally," which is contemplate your navel. If you can take care of yourself, then you won't be anxious and do a lot of unnecessary shopping, which is bad for the carbon budget of the planet. And there are very, very practical ways that these contemplative practices scale out. But I think it goes from hospitals, all the way down to individual practices.

Wendy Hasenkamp (45:10): Yeah. Yeah, that's great because there is such a... not necessarily debate, but discussion happening about: Where is the most effective impact in responding to climate changes? Is it all at the policy level? Or what impact can we really have as individuals? And I think this is an angle that I haven't heard discussed as much, at least in the public discourse, of really working with our own minds. And how does that change us as individuals, in terms of the way we view ourselves as autonomous or interdependent? And then, like you said, stress behaviors and the ways that we interact in the world. So it's really helpful.

Peter Wayne (45:50): I think the solution's going to be, like everything, it's like working at a lot of levels. Just like with racism, we need to deal with things at the systemic level and all the way down to ourselves.

Wendy Hasenkamp (46:00): And the individual level, yeah. So you've talked about how as, well for yourself, being a practitioner and being a researcher, you have kind of two labs. And both of them are critical. Could you share a little more on that?

Peter Wayne (46:17): Sure. Just so you know, we have some ticking coming in... That, unfortunately, is my radiator.

Wendy Hasenkamp (46:22): Oh, yeah. Boston style! *[laughter]*

Peter Wayne (46:24): So at times, I do feel like I live in two different laboratories. One is my teaching, and that's my empirical lab. Maybe it's where I see my patients, so to speak, because I'm not a physician. And one is the other laboratory of the Harvard Medical School and the Mind Body Movement Laboratory I lead there. And they're really synergistic. On a good day, I'm just grateful to have both of these career trajectories. I go to teach at the tai chi school, and I experience things. I start to digest all the things I've read in my research and that I've heard from other talks and colleagues. And it gives me a language to teach; I get feedback from my students. And that gives me some ideas to bring into the laboratory to test. And then we test those, and then it's this iterative process. We get an answer. We try something. And maybe it affects how we teach, how we understand things.

(47:21) It really affects how I teach. I bring science into my teaching. And I think that affects some level of receptivity to the Western community I work with. I think in the old days, it was the shaman who had the rattle that had the most respect—if they said something, you would believe it. Here, the scientist has a lot of power. But integrating it, not as truth, but as a way of seeing things. We can talk about energy channels, but we can also talk about connective tissue channels and how the research is showing that when you stretch this, alters gene regulation and inflammation, and how there is this map through this body that connects us, really gives people some ways of experiencing this work in different ways.

Wendy Hasenkamp (48:07): Yeah. Well, I know we're coming up on our time, so I just wanted to ask if you have big picture take homes for listeners, from your multiple perspectives that you bring to this work.

Peter Wayne (48:21): One of the things I'd like to end with is just an appreciation and acknowledgment of all the work that Mind & Life has done. I think just in putting those two words together, there's a sense of bridging and connecting. And I think whether it's the yin yang of tai chi, or whether many of the things we talked about, this fragmentation of what we call mind and body, or different organ systems, or even just different communities within an environment.

(48:54) For example, we have these grand rounds that often have people who don't talk to each other (or even carry a lot of implicit bias towards each other) coming together. For example, we have a really rich line of research on chiropractic care for migraines. And this has brought neurologists and chiropractors together. And they don't typically co-mingle well. And so I think what Mind & Life is doing, what the Dalai Lama is doing, in terms of creating these dialogues is very much what we're trying to do at the Osher Center, is that there's a lot to learn at the interface of ideas and cultures that don't typically mix together. There's an alchemy. And I think that the more we can stay open to hearing and understanding other people's perspectives, to collaborating outside of our departments. And as Evan had said, "We need philosophers as part of research teams." That just sounds... Most of my colleagues would roll their eyes at that.

Wendy Hasenkamp (49:58): Right. *[laughter]*

Peter Wayne (49:58): But you get that, and I get that. He clearly gets that. I think that there's the whole really... bringing things together and looking for emergence is going to be where we're going to have a lot of creativity and impact. And so much of our society right now, whether it's scientific, or social, is about subgroups and othering. And so I think more organizations like Mind & Life and other places—and

it's what we're trying to do at the Osher Center—bring people together to think in a safe space, is really needed.

Wendy Hasenkamp ([50:34](#)): That's great. Well, that's a good place to leave it. Thank you so much, Peter. This was really fun. I'm glad we had a chance to speak, and thank you for all of your work.

Peter Wayne ([50:42](#)): Thank you, Wendy. This was way more fun than I could have even imagined.

Outro – Wendy Hasenkamp ([50:54](#)): *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 iTunes 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 a 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.*