



# **Global Spa & Wellness Summit**

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**Keynote Speech By: Dr. Daniel Friedland**

**Let's Neurovate: Know Your Brain to Imagine  
and Innovate**

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## Let's Neurovate: Know Your Brain to Imagine and Innovate

[START 305729 GSWS Dr. Daniel Friedland.MP3]

DR. DANIEL FRIEDLAND:

Thank you. I am so excited to be back here. I really feel like I have come home to family. Thank you, Susie, and Philippe.

Last June, it was such a pleasure to be with you, for those of you who were there in Bali Summit. We spoke about evidence based medicine and [spaevidence.com](http://spaevidence.com), which has really set the scientific foundation for the spa industry.

Well, this year I want to share something innovative with you, too. What I want to do is I want to show you how the framework of evidence based medicine can be used to leverage imagination and innovation as well.

In this talk I want to cover three things.

- 1) The first thing I want to do is I want to show you and share with you some knowledge about the greatest asset that you possess to drive your imagination and innovation, and that is your brain. Because if you know how your brain works, you will know how to work your brain, that is to neurovate, to leverage it for imagination, innovation, as well as peak performance.
- 2) Second, I want to introduce you to a framework that will help you leverage the optimal conditions for imagination and innovation.
- 3) And then third, I want to show you how your knowledge of knowing how to leverage imagination and innovation provides a tremendous opportunity for the global spa and wellness industry to innovate itself. So that is my charge.

But to frame this all up, I want to ask you each a question. When it comes to the brain, what do you think is the greatest threat to imagination and innovation that also offers a tremendous opportunity for the industry to innovate itself?

I will give you a clue. Stress. Exactly - stress. And most of us, by the way, are stressed out. Research has shown that more than half of us have moderate stress, and about a quarter of us suffer from extreme stress, and research has also shown

that stress gums up, literally gums up our higher cortical circuits that are needed for imagination and innovation.

So, before we can look at how do we go about navigating stress, to leverage it for imagination, innovation, and peak performance, we really have to understand what is the relationship between performance and stress?

Just think about that for a moment. It may not be completely intuitive to some of you. We have known the answer to this since the early 1900s, with the psychologists Yerkes & Dodson, it is a bell curve. So yes, if we have too much stress over here, we don't perform very well. Stress locks down our creative abilities, in the brain. I will show you some of the neuroscience around that in a little bit, but less intuitive, if we don't have any stress at all, if you are down here, we are not going to perform very well either, and actually, this is something that John Kao shared with us yesterday. He shared with us why it is that when jazz musicians go through cutting or computer programmers go through hackathons, why is it that they perform well, because ultimately to perform well, you need to know how to fully engage and drive yourself up the curve. Because if you are bored, apathetic, or complacent, you are not going to perform very, very well, either.

Okay, so what does it take, ultimately, to then move us up the curve to peak performance? Well, you need two broad strategies that will drive you towards the peak, and as I share these with you, think about how you are perfectly suited to drive yourself and your clients to the peak of the curve.

- a) Because the one skill set that you need is you need to know how to be able to facilitate the ability to recover from stress rapidly that brings you to the curve from the right.
- b) On the other hand, you also need to know how to fully engage and sustain growth by catalyzing your health, relationships, and productivity, that then pulls you up the curve over here from the left, to the peak.

So now each of you, think of all the assets that you have right now that can drive you and your clients to your peak. Well, the blessing is that each of us has one asset that is immediately and hopefully always available, and that is our brain. And as I said early on, if you know how your brain works, you will know how to work your brain, to neurovate, to leverage it for innovation and peak performance.

So I did bring with me a prop of the brain. Here it is. It is a hand model. So I am going to walk you through the key functions of your brain. I am going to give you a quick tour. So, over here, first part of the brain, you will be happy to know that you don't only have one brain. Some individuals claim that we have three brains in one, it is also what is known as the **triune brain**, and the brain in evolutionary terms has developed from the ground up and from the back forward. So at the base of the brain, over here, you have the brainstem, represented here by my wrist. The brainstem is also known as the **reptilian brain**, this part of the brain is responsible for your vital life centers, regulation of respiration, heart rate, blood pressure. It is also responsible for triggering our fight and flight behaviors.

Now, unlike reptiles that lay the eggs and skedaddle, ultimately, we as mammals, we suckle our young, so we need another part of the brain, represented by the palm of my hand, and also represented by this area of the brain over here, this is called the **mammalian brain**, it is also known as the **limbic system**. And the limbic system engages in our primal drives, this is our pursuit of food, sex, and the ability and need to bond with each other.

In addition, this over here, this part of the brain, is the seat of our emotions, and there is a very important part of the brain, as I fold my thumb over, at the tip of my thumb is a part of the brain called the **amygdala**. The amygdala lays down emotional memory, so it is forever scanning, in our environment, what threatens us and what we like and dislike, because it wants to do a pattern match the next time we come in, to keep us safe. So whenever you go into a new situation, whether it be a conference like this, or any new challenging environment, your brain subconsciously is doing this, "Am I safe or not safe? Am I safe or not safe? Is this a reward or a threat to my time? Is it a reward or a threat to my time?" And then what happens is, if we get a pattern match or something being unsafe, boom, it is going to trigger fight and flight behaviors and keep us safe.

On the other hand, that drive into fight and flight has consequences, because as it drives us into fight and flight, what it does is it also pulls resources away from our higher cortical circuits, so we don't have the ability to be creative.

Now, on the flip side of that, this part of our brain, our limbic system, also breeds our frustrations and dissatisfactions as well, which can provide important fuel to drive us forward on imagination/innovation, too. So the limbic system is involved in creativity, too. However, thank heavens we have another part of the brain, and we need another part of the brain as it falls over the top, this top part of the brain, which helps us to both regulate and integrate our limbic system and is responsible

for imagination and innovation itself, and this over here coming over the top, this is the **neocortex**, or the new brain, it is what gives us really essentially our adaptive advantage as a species.

Now, the neocortex is immensely important. First of all, it is responsible for our conscious awareness, it also has the ability to really weigh the present, to envision the future, to generate ideas, and then to act on, to formulate and act on our decisions. All of which are crucial for imagination innovation.

Now, our neocortex is divided into **two hemispheres**, the **left hemisphere**, easy to remember, because it has a lot of L's associated with it, it is language, logical, literal, and linear thinking. As opposed to the **right side of our brain**, which is more involved in abstract thought—poetry, the arts, when John Kao was up here yesterday playing the piano - right side, awesome. And it is also the part of the brain that gives us really a holistic view of both our external and our internal environment as well. So this part of the brain, the right side of the brain, enables us to see the big picture, it enables us to see the forest as opposed to the left side of the brain, which enables us to see the individual trees itself.

Now the brain is also comprised of a number of **lobes**. At the back, over here, is the **occipital lobe**, and the occipital lobes are responsible for integrating visual information. Then you get to the back and the top of the sides, this is your **parietal lobes** over here, that part of the brain involves visual spatial processing, and sensation. Then you come across to the sides and the front over here, these are the **temporal lobes**, this is auditory integration and memory.

Now, these three parts of the brain—the **temporal, occipital, and parietal lobes** have association centers in them, and when your association centers are not shut down by stress, this part of your brain at the back over here enables us to connect widely separated and weird ideas to stimulate something called **divergent thinking**. This is the part of the brain that creates our most highly original and novel ideas. I will talk to you later on about how you get there as well.

So this represents highly original and novel ideas. Now, there is a part of the brain, on the right temporal area, that has actually been identified to be responsible for the flash of insight that drives innovation. Do you want to take a look? So I found this just before I came to talk. I found this by a study by - - What you are looking at over here is this is a scalp electroencephalogram. What it is doing is it is looking at our brainwave activity, when somebody puts on these scalp electrodes and if we watch for a tell, watch the spot, watch the spot, you see it there? You see that spot?

That is a spot, that is a spike of what is called gamma band neural activity. It is a type of brainwave activity that binds neurons widely in the brain. That is literally your heart or your Eureka experience in action. That happens 300 milliseconds before you become conscious of your insight.

Now, there is another spot in the brain lighting up right there. See that? That is your prefrontal cortex. That part of your brain is also crucial to imagination and innovation.

So let's talk about over here, so the prefrontal cortex over here is crucial. So, first of all, the prefrontal cortex is a part of the brain that is able to tap into your memory circuits, and you can actually begin to remember the future. Doesn't that sound like imagination? So you can tap into your memory circuits, remember the future, and then form a plan of action to achieve your vision.

This part of your brain, the **prefrontal cortex**, also has a number of very important functions as well. Firstly, it is this part of the brain, very important for respiratory, because when you are talking about regulating stress, it is this part of the brain and all the practices we will talk briefly about mined from these practices that help you regulate your limbic system to really soothe that limbic response so you can keep your higher cortical circuits open and prevent your limbic system from really hijacking your creative endeavors.

Second, it is also involved in empathy, intuition, social awareness, all of those and morality as well, all of those, what John Kao was mentioning yesterday was the importance of bringing values to our innovation. In addition, the prefrontal cortex also really locks into circuits of short-term memory. Short-term memory is crucial for us, why? Because it allows us to create novel associations in a theatre of ideas.

In addition, this part of the brain is responsible for our executive function— judgment, planning, shifting attention, decision-making, all again crucial for imagination and innovation. Now, unlike the temporal, occipital, and parietal lobes, at the back here, that are responsible for divergent thinking, the **prefrontal cortex is responsible for convergent thinking**, that is the linear sequential processing of ideas, where you can refine what you have imagined and then you can practically implement your innovation as well.

Let me just summarize here briefly from what we covered yesterday. Philippe and John spoke about looking at the moon, and having your feet on the ground. Well, **looking at the moon is your temporal occipital parietal lobe that is divergent**

**thinking, as opposed to keeping your feet on the ground, is your prefrontal cortex that really involves convergent thinking.** Creativity, imagination, innovation is a whole brain process, and it is your ability to flexibly navigate between these and know how to drive all of this together.

So now that hopefully you have got a better idea about how your brain works with imagination/innovation, now we are ready to consider what strategies could we leverage to drive imagination innovation? So I briefly, in the time that we have, I would like to introduce you to a framework that I have created that really helps you facilitate wellness, peak performance, and can drive imagination/innovation, too, and is called the Four in Four Framework to Achieve Peak Performance. So I want to briefly introduce you to this.

So it has four steps—it is named the Four in Four framework, because it has got four steps and four steps in step four, and how the model works is, when we have stress and self-doubt, it pulls us into reactivity and fight and flight behavior into our limbic system, and again, that draws resources away from our higher cortical circuits.

On the other hand, if you have skills where you know how to harness your higher cortical circuits and your prefrontal cortex in particular, you can both regulate and integrate your limbic system to more proactively tap into inspiration and drive creativity that gives your life a sense of meaning and fulfillment.

Now four steps are really needed to do this, and I am not going to have time to go into any depth on this, I am so sorry about that, but the first step we need to be able to do is we need to know:

1. First, when we are getting reactive, we need to know how to recognize that, so you have to be able to **recognize your reactivity**. Know what your reactive signature is, because it is all subcortical, in terms of your sensations, thoughts, feelings, and behaviors. And if you know how to do that, you can take the edge off your reactivity.
2. Then second, you need to know how to **dig below your reactive responses**, looking at the triggers of stress and self-doubt that is driving that to begin with, and know how to extract the teeth out of stress and self-doubt. Now, I don't have enough time to go into all of that, but what this entails are cognitive and **mindfulness practices** that are known on functional MRIs, to activate your prefrontal cortex and deactivate your amygdala, so this is essentially these practices

to help you soothe your reactivity so you retain your higher cortical circuits open for creativity, performance, and innovation.

This then brings us to the fun part over here, which is step three and step four, where we really are turning into what are the actual steps that drive imagination innovation itself.

3. Step three involves your ability to **cultivate creativity by reflecting and acting on what is truly important in your life**, and innovation isn't for innovation sake, it is about tapping into your deepest source of inspiration and your core values, that drives innovation. We spoke yesterday about meaning. **This is really kind of how you drive innovation, off a foundation of meaning.**

And this over here is a list of things that create what is called the recipe for the flourishing life. It overlaps with work done by Martin Seligman, the father of positive psychology, and he has identified in research that this is the recipe for the flourishing life.

So it involves really considering how is it that you like to learn? How do you like to connect with others, yourself, and your deepest source of inspiration? How do you like to best express yourself, and what is your highest sense of service, your highest sense of values and purpose? And then when you know all of that, I have taken all of that, and I can help you wrap that into a process that I call VSIR, and VSIR stands for Vision, Strategy, Implementation, and Results, and we then do that across the domains of health, relationships, and productivity. Because if you actually have vibrant health, if you have rich and deep meaningful relationships, and you have a sense of meaning in the work that you do, that is ultimately going to drive your performance and it is going to drive a sense of deep meaning in your life, as well as it is going to provide something called stress inoculation, it is going to inoculate you from stress as well, and by the way, there is a lot of science over here, for example, when you engage in exercise, how that rewires your brain as well, a lot of data on that, too.

So that over here is, in step three, your ability to really optimize health and productivity. Ultimately in the end, it leaves you with an experience of significance and your ability to leave a legacy. So that is step three.

4. Now we come to the most important step of all, step four, is your **ability to continually stay on track, moment by moment, on your path of inspiration.** Why is that important? The reason why that is important is that you can know how

to take the edge off your reactivity, you can know how to extract the teeth out of stress and self-doubt, you can know what is important in your life, but stress and self-doubt are going to continually pull you off track.

So how do you stay on track moment by moment by moment? I didn't have the answer until three years ago, and then literally, one night, like a bolt of lightning out of the blue, in a flash of inspiration, the answer came to me. I wrote one of the first textbooks in the country on evidence-based medicine. I spent the last decade training thousands of physicians now in 45 states, in the U.S., on evidence-based medicine. The answer was right under my nose. And let me tell you first what evidence-based medicine is.

Evidence-based medicine is a skill set-this is, by the way, how all doctors are now trained to make medical decisions. This is how your doctor thinks, by the way. So they are trained first to know how to frame the right questions to begin with, then they are trained to know how to go out and find the best available scientific information, then they know how to evaluate that information and then they know how to apply it to the care, to your care.

My flash of insight was this framework can be used just as well, not only to help you to navigate science, but also to help you navigate inspiration as well, and this now becomes a unified framework for navigating science and spirituality on your journey towards health and well-being.

So let me show you how this works as it digs into imagination and innovation. This process begins with framing the right questions to begin with, it begins with asking the right questions to begin with, so why is this important? Well, we are now more than a decade out from the decade of the brain, and **what science has firmly established is that the thoughts that you have rewire your brain and result in neuroplastic transformation.** You have a scalpel in your hand with which you can reshape your brain until the end of your life. It is extraordinary.

Now, we also spoke yesterday, Philippe, we spoke about complexity. I will tell you, hands down, the most complex system known to humankind, hands down, is the human brain. Anyone want to hazard a guess how many neurons? One hundred billion. One hundred billion neurons, each of which makes 5,000 to 10,000 connections. The frequency or the combinations of connections that our brain can make is 10 to the power of a million. Now, let me put that into context. The number of atoms in the known observable universe is only 10 to the power of 80, so the human brain is the most complex organ or system known to humankind. So, when we ask questions, much like when you look at chaos theory, in chaos

theory, you have a butterfly that flaps its wings, and it is an attractor, ripples through a complex weather system, and results in a tornado in Texas.

Well, the most powerful attractors that we have are the questions that we seed in our brain. So if you seed in your brain, "I can't do this," that is going to recruit tens of thousands of neurons and that will become neural destiny. If you see in your brain, "I can and I will," that is going to recruit a different neuron and networks and that will become neural destiny. So the questions you seed are absolutely crucial and when it comes to stress and self-doubt and our habitual thought process response to that, we drive ourselves into nonproductive places, because when you have stress and self-doubt, there are four possibilities, right? It is "what if," and all the bad things that can happen in the future, "if only," and all the regrets that I have in the past, and in the present, it is "what is wrong with me/what is wrong with others?" And does that ever get you to a productive place? No. The habit of doing that is going to strengthen those neural networks, and literally, that becomes neural destiny. So if you want to take a cynical view on the world, that is fine, but that will become your experience of the world from a brain state. So when it comes to imagination and innovation, what are the best questions that we can ask? Again, rather than how we can, rather than why we can't, great place to start.

When it comes to imagination innovation, we want to really focus on some of the simple questions like, "What are the challenges and dissatisfactions that people are having? And how can we come up with solutions and imagine a better world and a better result?" And then very specifically we can drive down questions and say, **"What specific solutions, product, or processes could we put in place that would be of great benefit to our clients?"** Also, when it comes over here to looking at questions for your clients, here we have spoken about how this is the recipe for the flourishing life. So when you come up with your innovative offerings, it can be very helpful to say, **"Am I satisfying my clients' needs to learn? Am I satisfying their needs to more fully connect with themselves, mind, body, and spirit, and with others in the highest source of inspiration? Are we satisfying the needs to express themselves fully to find their greatest sense of purpose? Are we doing great work to really, truly help catalyze their health relationships and productivity?"**

So, in step one, you can see over here why framing the question is absolutely crucial, because that is going to become ultimately your neural destiny. In step two of step four, we have the find piece. The find piece is how do we create optimal brain conditions, optimal brain conditions where the answers to our questions can

find us, what do you do? How do we leverage our understanding of the brain science? Well, we spoke earlier on, the first thing you have to need to know is how to regulate with your higher cortical circuits the limbic systems that can really gum up your creative thinking. Now, if you are able to do that, and we don't have time to talk about that, but certainly there are a lot of practices that facilitate this, one of which is **soft belly breathing, and mindfulness practice**, for example.

Now, if you have your higher cortical circuits open, now we need to know how can we regulate our higher cortical circuits to drive the imagination innovation creative process itself, and the real question then becomes, "In this moment, would divergent thinking be most helpful, or convergent thinking be most helpful?" So for example, if you are at the beginning of a creative process, if you are at the beginning of a creative process, where you need to come up with highly original ideas, or let's say you have been working on something, you are working, working, working, you are getting frustrated, and you hit the wall, and you can't go any further, at that point, what is most helpful is to let go. **Just let go. Don't work harder, stop working, go out for a run**, and I will show you why that is important. You want to deactivate your prefrontal cortex and you want to let all the information flow forth from the back, the temporal, occipital, and parietal lobes, which are your circuits of divergent thinking, where you generate your most highly original and innovative ideas.

**And a number of factors have been known to facilitate divergent thinking. Relaxation. Sound familiar? Hot showers. Drowsiness before waking, before your prefrontal cortex can stimulate. Exercise. Mindfulness practice. The color blue, the seats that you are sitting in. Also, positive emotions. Also, playfulness and visualization and you are going to get a gorgeous experience about this.**

I went to the creativity workshop and I am so excited, Shelley and Alexandra, about what you will be sharing in the next session here as all of that facilitates divergent thinking.

On the other hand, if you are at the point in your process where you need to work in a very logical, linear way, to solve logical problems, or you are in a situation where you have got your "aha" experience, and you have got this all out, but you have got to figure out, "Huh, well how do I refine this idea? How do I refine it and then how do we practically implement that innovation?" Well, then you need to know how to activate your prefrontal cortex, and really execute on convergent thinking.

And to do that, there are a number of practices. First of all, rather than thinking less, you need to be able to know how to concentrate and focus your attention, so to really focus, and for those of you that have had your first cup of coffee or your first cup or two, you will be happy to know that **stimulants like coffee can really help focus our thinking**. Now, you don't want to drink coffee if you want to get into a divergent space, but if you are at the point of refining your ideas, coffee is cool. Okay?

So you need to know, "When am I going to use divergent thinking or convergent thinking, in this process?" And again, it is your ability to be flexible across both domains that is going to help you to leverage imagination innovation to its optimal effect.

Now that over here is step two of step four, which helps you again, find optimal brain coherence, so the answers to your questions can find you. Then, in step three of step four, we need to know how to evaluate these answers. I am being very brief here. We need to know how to look at, "Does this feel right more than it feels good?" Because if your clients only operate on what feels good, they are not going to commit to a vigorous exercise regimen, they are not going to quit tobacco, so you have got to really educate them, "**Does it feel right more than it feels good?**" Then you want to know, "Is it good for you and others," and when it comes to innovation, you want to know, "**Does this get you to a place where you are providing highly novel and original ideas that are truly useful to others?**"

Then, the applied piece over here, comes next. The applied piece is the courage to take action. It is really taking action on your innovative ideas itself, but it doesn't stop there, because once you take action, you come around the spiral, I call this the frame, find, evaluate, and apply spiral of growth, because you ask the next question, and the next question we ask is, "Is what we are doing working?" And if it is, then we find wonder and appreciation for whatever the source of inspiration is that is driving our innovative process. We give thanks. If we are not there yet, we then ask the next question, "How can we drive forward and do better than what we are doing," in this frame, find, evaluate, apply spiral of growth, and yes, we spoke about when we are dealing with complex problems, we don't want to do this in isolation, we want to use the same architecture in groups.

So, given that I have limited time and I apologize for that, I want to just start winding down and summarizing. Let me just go to the next. What I have shared

with you is I have shared with you a framework, a four-step framework, the first two steps in the framework help you recover from stress, driving yourself to peak performance from the right. Step three helps you to fully engage in what is most important in your life and catalyze your health, relationships, and productivity to drive you to the peak of the curve over here from the left. And then we spoke about step four, where step four has the ability where you ask good questions in your frame, find, evaluate, and apply spiral of growth, that results in neuroplastic transformation. That doesn't only get you to peak performance, what that actually does is that shifts your curve up and to the right, where you achieve higher levels of performance at higher levels of stress.

**So, I just want to wrap up and actually share with you that this curve over here offers an innovative idea for the industry. Last year in Bali, we spoke about spa being synonymous with relaxation. So where are we on the curve with that? We are over here, we are coming up the curve from the right with spa being relaxation. But now, this year, we have added wellness to the Global Spa and Wellness Summit. What we are now doing is we are not just talking about promoting health, but I also encourage you to consider the domains of relationships and proactivity, too. All of which help you fully engage to drive you to the peak of the curve over here from the left.**

But as I wrap up, I want to leave you with an innovative idea, where I think this really represents your major opportunity. What I want to encourage you to do, is I want to encourage you to begin to explore all of the emerging science, the emerging brain science of neuroplasticity, because if you can begin to leverage that, and these practices, such as mindfulness practices and speak to its benefits, with neuroplastic transformation, then what you get to do is you get to, for yourself, and for your clients, you get to move the curve up and to the right, where your clients and you can move lives from good to great.

So, when you think about moving from good to great, not only will your clients be very satisfied with that, but that by the way, is what offers a very enticing return on investment to corporations looking to invest with you in corporate wellness.

As I wrap up, my hope this year is that spa will be remembered for being more than just relaxation, but we can also imagine and innovate it as a destination of rejuvenation, wellness, peak performance, neuroplastic change and ongoing transformation.

I just want to thank you. This week, may we continue to collaborate well together, by framing great questions and finding, evaluating, and applying the answers we receive to innovate for the benefit of those we serve.

[applause]

[END 305729 GSWS Dr. Daniel Friedland.MP3]

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