

Podcast Series, Holistic Nature of Us

Episode # 25: Meet Erika Harrison

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Hi I'm Judith Dreyer,

Thank you for joining me for this pod cast series "The Holistic Nature of Us".

My intent is to take us, you and I, into a better understanding of the concepts behind our holistic nature and how that ties directly to the holistic nature of the world around us. How can we connect the dots in practical ways that we are nature and nature is in us?

I will be featuring authors and educators, practitioners and others whose passion for this earth helps us create bridges. We'll see what's trending, what's relevant to our world today, not just for land use but to connect the dots between nature and ourselves. It's time for practical action and profound inner change so our natural world is valued once again.

Today I am delighted to introduce you to Erika Harrison. She is the president of the board of directors with the Biomimicry Institute, a non-profit organization empowering people to create nature inspired solutions for a healthy planet. The Biomimicry Institute works to create a new generation of sustainability innovators by focusing on education and entrepreneurship through youth education, global design challenges and ask nature.

Erika welcome! I'm delighted to have this conversation with you about the institute, your role in it and some of the exciting innovative challenges that we're going to see applied in our world.

ERIKA: Thank you so much Judith. It's wonderful to hear your introduction. I couldn't agree more with everything that you've said and it's an honor and a privilege to be invited to speak with you today.

JUDITH: Great. Let's start with the Biomimicry organization. Tell us about it and how it was started, and founded, and the principle behind it.

ERIKA: Right. Yes, thank you. Well maybe I'll start first and just say what Biomimicry is. At its essence, taking the word apart, "bio" meaning life, mimicry is to emulate or to copy. So, it's really fits with the ethos of your podcast in many ways, looking to nature. But Biomimicry is an approach to innovation that seeks sustainable solutions to human challenges by emulating nature's patterns and strategies. And particularly relevant, as you also said in your introduction as there are growing threats that we face and bad news, the Biomimicry Institute offers a key approach to increasing sustainability of local and global communities. It's a relatively new discipline. The word was actually coined by the cofounder of the Biomimicry Institute. Her name is Janine Benyus. She wrote a book in 1997, published in 1997 called Biomimicry and that has, in part, spurred much interest in the field. And the word and the discipline has now grown in many different directions and it's a really exciting time. So that's a bit of the background before the institute was even born, just to give a little bit of a framework there.

JUDITH: Great. It is a different term. I don't think it's mainstream yet, but it sounds like it's going to become mainstream just because there are challenges open to global innovation as well as youth innovation, which I think is really exciting, to see our young ones coming up with some great ideas.

Erika tell us about your role with the Biomimicry Institute.

ERIKA: Right, yes. The Biomimicry Institute. So, the institute has been around for around 10 years, just over 10 years now. I have only been formally involved for the past year and a quarter, so to speak. I am, as you said, I am the chair, the president of the board of directors and I'm thrilled to be a part of such an amazing team of staff people and thought leaders in the field who are really pushing this forward because it is such an exciting time, with the design challenges in particular. You did ask about the history of the institute and I didn't want to gloss over that, but I guess what I would say is that, as I've said, the institute has been around since 2006. There have been a few different permutations of partnerships. There was a larger body called the Biomimicry Guild and that has since splint into two distinct organizations just 5 years ago. So even though on paper it looks like the Biomimicry Institute has been a well established non-profit for more than 10 years, it's really more like 4 or 5 years but the programs have really been well developed, thought through with a clear theory of change, directions,

strategic goals and lots of fantastic programming staff and excitement building around the programs that we do offer. And so those programs are, as you said in the introduction, the backbone behind all of the work is an on-line tool called “Ask Nature”. It’s really quite as simple as it sounds in the name. The idea is that, the ethos of the institute and Biomimicry in general is that we want particularly the product designers, that we want everybody to be asking, well actually I’ll use a quote from our founder Janine Benyus in which she says, “We need to learn how to quiet our human cleverness and look to the natural world as our mentors and our teacher.” She also does say sometimes, “Look to our biological elders.”, which I also love that phrase.

JUDITH: I do to. That’s a great one.

ERIKA: Yeah. So, the “Ask Nature” tool is a tool that was devised to do that. And the question is simply, “how would nature do *this*?” and *this* being a process or a function. Whoever is accessing the tool on-line can follow the steps and look at the process and emulate that, starting with the question “how does nature do *this*”. So that’s the Ask Nature tool. The rest of the institute, or the whole institute is really focused on education programs. We have design challenges that have been established for 4 years now. There’s a global design challenge that has attracted people who found it randomly, just through internet searches. Young adults in their late teens and early 20s from Southeast Asia for example, a few years ago. Teens from all over the world. And there’s a lot of exciting news there that I can tell you a little bit about too. Then we also, just this year, have launched the first formal youth design challenge which is focused specifically on middle and high school students. And both of those programs have just gone through a process. You’ll notice in the name of the program is *a challenge*. It’s a contest of sorts for applying nature’s wisdom to design challenges and a way to solve some of the issues mostly related to climate change. There might be issues around water capture, water storage or a non-power-based refrigeration source because these are all issues that we might be facing down the road, as well as the more classic pieces around climate change like reducing carbon emissions, carbon capture, sequestration, those kinds of pieces. So, yes, it’s a really exciting time at the institute. I, if I could too I’ll just say that because I’ve only been a part of the board of directors for a year now, I was first introduced to the institute and the work of Biomimicry only a few years back. And my first thought was I was so excited that finally, in my mind I thought finally there’s a scientific methodology showing how humans would do well emulating nature rather than trying to control it. And part of why I

feel that was just so wonderful to find a formal discipline with scientific rigor behind it is because it's something that I think a lot of us have gravitated towards naturally and it's also so positive. To find that there was, as I've said, a rigorous discipline around the work was thrilling. And to start influencing people who create our built environment all the way from engineers, to designers, to product designers is, I think an important piece when we sadly, in some ways, live in a very materialistic culture. So why not have the people who are creating those materials around us in a built environment looking to nature to learn lessons that we can learn there.

JUDITH: I love that. You know in my walk I've studied Ayurvedic medicine, Taoism, a few of the traditional Chinese medical models and Native American Culture as well. I was always impressed with the fact that their system of healing reflected their observation of nature. Nature is a part of it; it's not separate from it. You have this mythological kind of construct with the seasons and the colors and the tastes and the flavors and the mythological animals that are associated in their system with their directions but the bottom line is, it creates healing. And they looked at nature. It's amazing to me that we haven't looked at nature because, as you've said so beautifully, nature is there for us to learn from, to be in partnership with. And that's the piece I think we're missing. The Biomimicry Institute for example is helping to create that bridge.

ERIKA: Yes, I think so too. And you said that the healing and the wisdom of healing is a part of nature. What struck me when you said that is we are too. We have forgotten that we are a part of nature and that there's a much larger system that has a lot of wisdom. It has been on this planet doing sort of research and development, experimentation for 3.8 billion years. And that's a lot longer than humanity has been on the planet. So, it would not only behoove us, but it would be thrilling to have more people looking to nature to find solutions and to have that piece of reconnection. That's one of the important pieces around the work of Biomimicry is to reconnect with nature. Another is the more formal process of the emulation. That's the rigorous scientific methodology that goes into both studying and then applying nature's wisdom in various ways. And there's the general ethos of looking to nature. We find that even if people come in with an engineering brain and they just want to study something and build product, once they find this window into reconnecting with nature, it opens the door to a whole host of other possibilities and looking at our place in the natural world.

JUDITH: Yes and it's uplifting, isn't it? We seem to have a lot of problems and I think, or it feels to me that we have taken the opposite view point in terms of our development as a species; conquer, control. That means we can take what we need, the devil be damned so to speak. And we're paying the price for that today in our future generations not so future but my grandchildren and the next generation after them, they're paying the price for some of our folly, if you will. I find that the Biomimicry Institute, for example again, is offering incredible innovation. I'd love you to talk to us about a couple of examples of some of the innovations going on and especially something from the youth design challenge.

ERIKA: Right. There are so many examples when we first were in touch about this opportunity. It's almost overwhelming for me to think about which examples to select. But as I was saying, yes, we recently went through the process, or the teams, all the applicants for the design challenge teams went through a process of being selected and the finalists have been chosen. There are a few very exciting teams. Very inspiring solutions coming from these young and aspiring new entrepreneurs and scientists and budding architects and engineers. One in particular from the youth design challenge that is getting a lot of attention on our website; it was published just last week in our newsletter, is the first prize winner in the middle school category is a team called Team Sun Tile from Hawaii. I'm going to mispronounce the name of the school but it's Punahou School in Honolulu Hawaii. This team of young students looked at the Saharan Silver Ant's ability to reflect light, the desert scorpion's ability to withstand sand storms with its erosion preventing exoskeleton and the honey bees hexagonal honeycomb shape in order to create the sun tile. This innovation fits on roofs in a hexagonal pattern and is covered in grooves to withstand erosion and microscopic prisms to reflect the sun, creating a long-lasting sustainable way for desert homes to stay cool. And, these kids are in middle school. They're being inspired by this variety of different organisms to create something that has very practical uses in our modern world and even more so going forward. And as I told you before Judith, my background is more in the social science. I'm an enthusiast of Biomimicry and my background is in culture and systems change and design thinking. I'm more of a social scientist than a scientist or definitely not a biologist. I hesitate a little in getting into the details about explaining some of the processes but I know that, for example, this team looking at the Saharan Silver Ant's ability to reflect light, that gets into what we call structural color, which is essentially looking at how does nature create color, instead of the way humans do it.

We usually use a lot of toxic chemicals and paint something and put a coating on top. Where as nature, if you look at a classic example that I do remember is the feathers of a peacock. The peacock actually is all brown in color. The reason we see color is because of the way that the organism has designed itself to play with light in effect and refract light, and so that it looks like these brilliant colors to the eye. But it's all just done structurally in the shape. That's just again one example that this team of young students took looking at the ability of the silver ant to reflect light, and they included that in their creation of the sun tile.

JUDITH: That's amazing to me. Who knew that a peacock was brown? And when I looked on your website and saw the photograph of the brown design of that feather, it's that design that captures the light and plays with the light, which I had no idea about but I bet students that are in that middle school and high school area that love science are just thrilled with these discoveries, you know? Because they're not routinely taught either.

ERIKA: No, they're not. And that's the larger goal of the institute and many of us who are involved in championing and being enthusiasts of Biomimicry is that we want this to become a part of the way that science is taught. That why not? Why wouldn't we look to the natural world? And you're right, I didn't know that peacocks were brown either until I first learned that in one of Jeanine's and Lisa's talks. And I thought, why don't we learn this in school? Why wouldn't we be looking to the natural world? We've got the solutions all around us for some of the problems. Some of them are pretty big problems and as you've said there's some negative news out there and it's so inspiring for me, personally, after working a lot in both social and environmental progressive circles. There's a lot of bad news out there and Biomimicry just seems to hit all the check boxes for me in terms of doing something positive for the world and being inspiring. I'm feeling very positive about the future again.

JUDITH: Yes. Janine (Erika, my goof) could you give us another example maybe from the adult world for innovation?

ERIKA: Yes (Janine Benyus is the founder of the organization, so I wouldn't want to get confused with her, because I certainly have no where near her expertise or knowledge on the subject.) But from the adult world let's see. One of the examples you mean from the global design challenge, is that what you mean?

JUDITH: Yes, that would be great.

ERIKA: Here's an example from last year's global design challenge. It's a team called Wind Chill and they are actually from, I'm in Vancouver Canada, that's where I'm based, so I'm proud to say this is another fellow Canadian team but they're in the province of Alberta through the University of Calgary. They created an electricity free refrigeration system inspired by how animals regulate temperature. It was so amazing to see this. Since I have been involved gradually over a couple of years now, but more formally for the past year, I've seen some of these teams. I've witnessed their presentations and their pitches to live audiences in San Francisco. I've seen the winners being selected on stage and receiving \$100,000 check and you know it's all very exciting. This team in particular, they weren't the winners from last year. One of the reasons why this was such an inspiring solution, this team Wind Chill, was because there's another organization, a book written by Paul Hawkin a couple of years ago called Project Draw-down which took a very comprehensive look at climate solutions, essentially. There's also an organization that you can find at www.projectdrawdown.org and what they said is that actually the number one way to reverse global warming is to manage and phase out chemical refrigerants. So that makes this team, Wind Chill, even more relevant. When you think of well some people might not think that refrigeration is all that exciting. But when we're looking at these changes in the world and how to manage global warming as well as a climate that just continues to heat up, a planet that's continually getting hotter, it's an alternative food preservation unit. It doesn't require any electricity, so it can be completely off the grid. It's significantly less expensive than modern refrigeration methods and it can be incorporated into low resource regions when it's most needed. And as I'm sure you and your listeners know, unfortunately the parts of the world that are affected by the developed world have sometimes been called 3rd world countries, it's even more important to provide solutions that are also economical and can be implemented practically.

JUDITH: Yeah, wouldn't it be great to have a refrigerator that doesn't need electricity. Here in the Northeast we get storms. Especially in the wintertime. We lost our power last year for a couple of days. We use generators and that's gasoline, and you know the list goes on. It seems like we go after the symptom instead of after the cause. That's what I like about some of these holistic models is that they look at the root of something and then create the solution from there.

ERIKA: Yeah, you've got it. That's exactly it. And even thinking of how people who create products, for example, or engineers, they're thinking about the end product. It really represents an entire sort of a 360 or 180 on their thinking to look at, no, let's not rush to the answer or the solution. Let's look at, what is the issue? How does nature approach this issue and look at examples from all over the world from plants to animals to insects, all different types of organisms? And look at what we can then mimic in the process. To learn from that. To look at nature as a mentor and a teacher and an elder that we can learn from and then to create solutions that work for our human environment as well.

JUDITH: Right, that relieves the stresses in our society as well too, because as you know as a social scientist that there are a lot of stresses in our society as a result of some of our approaches to solving or to creating even product and structure in building and infrastructure, etc. But it hasn't been nurturing, is what I'm getting at. It hasn't been sustaining. I like the paradigm shift of going from life draining to life sustaining.

ERIKA: Yeah and there are so many. The co-founder and the author of the original book on Biomimicry Jeanine Benyus she has such a way with words. I so admire her ability to weave poetry in with the science, biology. Another of her quotes that I love so much is "Life creates conditions conducive to life." And it's really as simple as that.

JUDITH: It is as simple as that or the planet wouldn't be here, and it's been here, as you mentioned 3.8 billion years.

ERIKA: Yes. That's a lot of time to be experimenting and doing research and development to find what works and what doesn't. Things move into different ecosystems.

JUDITH: Right, there's always movement and there's always growth. It's just that our human eye and senses can't always detect that. But today we have a different level of technology to help us in that model, so to speak.

ERIKA: Yes, exactly.

JUDITH: Well could you give us some kind of tip or activity that is related to this work?

ERIKA: Yes, as I was saying a little bit earlier there, there are three pillars of approach to Biomimicry and regardless of which one someone chooses to enter it's invariably a window to the others. And so that's how people from product design can get inspired to feel connected to nature. One of the ways that is used in all of the workshops that happen and with all of the design challenge teams is an activity called I-site. There are certain steps to it. But at its essence it comes down **to going into nature, sitting down, being quiet**. Make sure you have a pen and a piece of paper for inspiration, thoughts, notes and observe. I love this as well myself coming from a background in cultural anthropology. The anthropologist is the participant observer and so there is always that fine line between when do you participate or observe? And this I-site exercise is purely observational. And the idea is to find a quiet place, sit in nature, test your skills of observation or your observation skills, **choose one particular organism** whether it's a blade of grass or a bird in the tree, or where ever you find yourself. A frog in a pond area. And just **observe that one organism**. It depends how much time you have available. You could say 25 minutes if you have that much time and then 5 minutes recording what you've experienced and really try to connect with that organism and think about not just what it's, you know how it might be reacting to wind or rain in the moment but how that might act over time. In this way it's first of all, one of the most important things it does, is it gets us into nature. Because so many of us, in our modern busy world, are just not in nature. It gets an individual into nature sitting and observing and paying attention to another organism in the natural world. And the things that people observe and think about that I've witnessed from people doing the I-site exercise; (I did it myself recently when I was in New York for training) actually in applying these concepts to social innovation and we had an activity in the New York Botanical Gardens. That in itself was so amazing, that you're in one of the busiest cities on the planet and there are these beautiful botanical gardens with nature all around, and just sit and listen. Because that really is the essence of Biomimicry – is to calm our human cleverness and pay attention to the lessons that we can learn from the natural world.

JUDITH: That's so true. My elders in my Native American walk always said to spend time in the stillness – 20 minutes in the morning and 20 minutes in the evening. And it doesn't necessarily mean that you're going to see anything outstanding but it's the fact that you just sit there and maybe one night you observe the dragonfly and the next night a deer comes into the picture. And the third night the bats are flying around. It doesn't matter

what you observe but the fact is that you stay in that stillness with nature. Because we connect with our inner senses. We don't connect with nature in a dramatic way through our visual senses or our auditory senses. It's that stillness that brings us into relationship with them.

ERIKA: I couldn't agree more. Do you think your listeners would be interested in a few more examples of that exercise and how to do it?

JUDITH: Yes!

ERIKA: It's something that we can add in the transcript that we can add for people who are interested to view this PDF as well.

JUDITH: Give us another one.

ERIKA: I'll tell you a little bit right now. So, the testing your skills of observation in more detail would be to sit in front of an organism or any natural object, **draw a quick sketch of the object** and don't worry if you can't draw. And then draw the organism or artifact again but this time look only at the object, not at your paper while you're drawing and try following the outline of the object with your eyes. Make your pen follow the path that your eyes take and then compare your drawings. And the question would be; how similar are they? Did you really observe the first time because sometimes we think – again this is the quieting of human cleverness. Learning how to do that is to really observe, rather than just drawing what we think it should look like.

And then another step is to make a sound. So close your eyes and listen. With your journal or paper in front of you, you can **create a symbol to represent each sound that you hear**. Keep your eyes closed. Using these symbols, make a map of the sounds that you hear all around you in all directions. And then **ask, are the sounds related or responsive to each other?** And then open your eyes and write down other observations. And again, the exercise is designed to get us in tune with using different senses to pay attention to nature. This one being auditory of course, listening to the sounds.

And there are other steps. You know this kind of activity or exercise as you can imagine could expand into an entire workshop or it could be just a simple exercise for a few minutes. But one tip is to look for multifunctional design: to study the organism and guess the primary function of something

that you're observing. For example: ears that are designed for hearing; legs that are designed for running; wings that are designed for flying. And then to think about other functions about that form, that the form possesses or systems that are associated with what that design might serve. So, an example of a more specific question is: **why else is the ear shaped that way**; what else might it do for the organism or the system? Because if you think about it, the ear doesn't need to be shaped in a certain way in order to functionally hear. So maybe there's another reason? That's an activity that would help people think about how form is related to function as the process. That's a varying part of the scientific discipline behind Biomimicry and mimicking what we see.

There are a number of different activities that have been designed all with the ethos in mind to connect with nature, pay attention, use different senses than we might normally be used to. Use different powers of observation and reflect on that. And to look at the connection between form and function because that's a very important. That is the core piece of Biomimicry, the connection between form, function and processes and looking at the strategies that nature has.

JUDITH: Erika these are great examples and they're very practical too. I can see educators using these in a school system. Children love to be outside. They love to observe bugs. I mean they're not afraid of bugs. They're very curious about nature so I think it's exciting.

Before we end, could you please give us your contact information, websites, places for people to look up some of the innovative ideas that you've just shared with us?

ERIKA: Yes, of course. The institutes website is simply www.Biomimicry.org and that is the window to the world of Biomimicry. There are many different aspects to the website. Your listeners if they're interested can very easily sign up for a newsletter and that is, where the news would be coming from and all of the design challenge teams and the exciting news of the finalists that were just chosen. The recent newsletter that went out just a week or two ago does have short videos, 3-5 minutes from each of these teams from youth design challenge and the global design challenge explaining their solution and their issues that they're addressing and what they've been inspired from nature to do. I think that would be a great place for your listeners to start.

JUDITH: I agree. I've looked at it myself and they're very engaging. And, like you've said, they're short but you get quite a flavor and taste for what's happening around the globe with these innovation challenges. I'm just so impressed with all of them. But I just love what the children are doing. You know to see them excited about it.

ERIKA: Yes, it is. It's very inspiring. Yeah, we need more good news these days and particularly focusing on the younger generation, providing them with a lot of positive strategies and solutions because otherwise they might have a pretty daunting task ahead of them, you know, looking 50 years into the future.

JUDITH: Right. And that's, I think, part of what we're facing today as citizens of this planet. It's hard to feel positive about 50 years down the road. In my world working with sustainable landscaping, sustainable gardening, holistic health, I see a lot of sort of dire predictions and I don't think we have to fulfill them. I think we really can change our approach which will have far reaching consequences down the road.

ERIKA: Yes, exactly. It's a reminder again that sometimes the best ideas might not be ours, that there are all of these solutions all around us. As you say there's bad news everywhere you look and it's important not to get mired into that bad news. And for me at least, and for many of us who've discovered Biomimicry it really does seem to capture the way to inspire the future and really to shift culture, quite honestly. Because it brings people together in a way that hasn't really been experienced. It's so interdisciplinary. The only way to practice Biomimicry is to do it in multi-disciplinary teams, for example, so that you're learning from one another rather than just having engineers looking at their own solution, or architects looking at a solution or designers. I find it (biomimicry) one of the most inspiring things that I think I've found in my entire life.

JUDITH: I'm happy for you but I'm also happy for us for all your sharing because this is exciting to me.

I want to thank you again for joining us. I hope everyone feels as inspired as I do by Erika's talk, her advice but also what the Biomimicry Institute is trying to bring to our world. It is very inspiring but also very timely.

This is Judith Dreyer. I'm the author of "At the Garden's Gate", book and blog. And my book is available through my website which is

www.judithdreyer.com as well as other distribution arms such as Amazon. I'd like to remind all of you to share the pod cast. Let's get the word out. And, a transcript will also be available.

I like to end my show with a quote and today I'm going to take a quote from Janine Benyus, who is one of the co-founders of the Biomimicry Institute and she says:

"We are a part of a confident universe surround by genius."

Thank you everyone and enjoy your day. Bye for now.