

Butterflies
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May 15, 2016
UUMSB

Who has heard the saying, that if a butterfly flaps its wings that it can cause a tornado across the world? Anyone ever try and pick you up at a bar using a line about chaos theory or the butterfly effect? James Gleick wrote a book bringing chaos theory to the masses in 1987, and the theory has appeared all over in films and novels since, giving most of us only enough knowledge about it to get in trouble. The story of the discovery that this expression comes from is really neat. Dr. Edward Lorenz was born in 1917 in West Hartford, Connecticut. He got his Ph.D from MIT and became a professor of meteorology there, teaching until his death in 2008. One winter day back in 1961 Lorenz was working on a computer that was modeling weather patterns with 12 variables including temperature, wind, and so on. He set up a simulation to repeat a previous model, but rounded one number in the program from 6 decimal places out to three-- $.506127$ to $.506$.. He went out for a cup of coffee and when he came back, the whole two month simulation was vastly different than it had been before.

Peter Dizikes wrote of this discovery:

The unexpected result led Lorenz to a powerful insight about the way nature works: small changes can have large consequences. The idea came to be known as the “butterfly effect” after Lorenz suggested that the flap of a butterfly’s wings might ultimately cause a tornado. And the butterfly effect, also known as “sensitive dependence on initial conditions,” has a profound corollary: forecasting the future can be nearly impossible.

...Nature’s interdependent chains of cause and effect are usually too complex to disentangle. So we cannot say precisely which butterfly, if any, may have created a given storm. Moreover, as Lorenz stated in his 1972 paper, “If the flap of a butterfly’s wings can be instrumental in generating a tornado, it can equally well be instrumental in preventing a tornado.”

Lorenz also explained that while it is impossible to untangle all the causes and effects acting on a system to predict the future, that chaos theory is different than saying everything is random. In research on the behavior of gas, he found that “when he plotted their solutions on a graph, the result—a pair of linked oval-like figures—vaguely resembled a butterfly. Known as a “Lorenz attractor,” the shape illustrated the point that almost all chaotic phenomena can vary only within limits.”¹ Even in a 2008 lecture, Lorenz would not say for sure whether a butterfly could really cause a tornado, but he focused instead on the bigger picture, that tiny changes make a huge difference in nature.

Sometimes troubles can seem so large, from the troubles in our climate that Lorenz himself studied, to things like oppression and poverty or politics. There are powerful human forces in the world that impact the natural world and that cause the natural world to impact people. And yet, it is also true that tiny changes make a huge difference. We are part of an

1 MIT Technology Review, When the Butterfly Effect Took Flight, by Peter Dizikes, February 22, 2011, <https://www.technologyreview.com/s/422809/when-the-butterfly-effect-took-flight/>

infinitely complex web, and sometimes the connections are easy to see—we don't need any assistance from scholars to understand—and sometimes no amount of study or experimentation can break down connection into understandable parts. How many of us have had a day in the last week or month when we wondered about future, or whether our choices matter? I know I have. And then I remembered the power of the small things in my life that have made all the difference—a kind word here, a hug there, and listening ear, seeing someone standing up for what they believe in. The little things matter, and more than anything else in this incredibly complicated system we live in, they are something over which we have some control. We have the power to make small changes, to be open, to pay attention, to care for others and ourselves. We never know when the choice we make to help another person is going to be a choice that leads to big change, but we can know that it matters.

For better and worse, in our lifetimes this world has gotten much, much, smaller. Even with billions of people on our planet, we are connected to each other in more visible ways than ever before—and it is also easier to move through life without deep and meaningful connection to each other and the earth. Soon in our service we are going to hear from Ricky Bernstein about the Hands in Outreach program that connects our congregation with girls and their communities on the other side of the world in Nepal. We are also wrapping up our annual stewardship campaign that will help us shape the future of our congregation. In relationship to the earth, we are metaphorically and literally smaller than the decimal points that Dr. Lorenz rounded in his lab in 1961, and yet we have an oversized impact in our community, and through our outreach and the work that we do and support here together, we have a huge impact on the larger whole. I know that most of us have already made our pledges for the upcoming budget year, but I invite us all to consider the impact of our gifts. How many of us, when we think back over the last week, or month or year had one of those moments when we felt a small action make a larger difference, and that moment was in some way connected back to this community? I bet a lot of us have.

I have been reflecting on the role of the church in modern New England life and what our place is as a liberal spiritual and religious community. I think that our job is to not only be a place of spiritual exploration, social justice, worship, community, and hope, but through all of these things to be a body that can fill us up like nothing else in our current society can—to help us be open to find the tiny changes that feed the big ones. In a world full of media and a faster and faster flow of information, it is easy to forget to take the time to center ourselves and work to make *meaning* out of our experience. It can be hard in a world with answers to billions of questions at our fingertips to hold mystery and to sit with knowing that we can't know everything. In a world with suffering and injustice all around us, moving forward can feel scary and overwhelming. We are the place where we remember, where we practice, and where we figure out together how we want to be in relationship with the web of life. We are a well that we come back to again and again, a place to be filled up. I am grateful for this community, and for our connections seen and unseen. May we find a sustaining path forward that supports our community, and all the connections that our congregation holds. May we find what we need to make our choices. May we build a more loving, compassionate, and just world, one choice, one flap of wings at a time.

So may it be. Amen.