

“The Butterfly Effect”
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There were once three Hasidim from different sects, each boasting that they had the greatest Rabbi.

The first one said: "Our Rebbe is so great, we were walking home from synagogue on Shabbat and it was very hot. We said, “Rebbe it is so hot, what can we do?” The Rebbe stopped and he prayed. And in front of the Rebbe and behind the Rebbe there was heat. And to the right of the Rebbe and to the left of the Rebbe there was heat. But in the area around the Rebbe it became cool and fresh and we all walked safely home.

The second one said: "That's nothing! We were walking home from synagogue one Shabbat and it started to rain really hard. And we said, “Rebbe, we're going to get sick, what should we do?” The Rebbe stopped and he prayed. And in front of the Rebbe and behind the Rebbe there was rain. And to the right of the Rebbe and to the left of the Rebbe there was rain. But in the area around the Rebbe, there was no rain, and we all walked safely home.

The third said, "Is that the best you can do?!?" We were walking home from synagogue on Shabbat, and we spotted a large bag filled with gold coins that was lying in the street. And we said, “Rebbe, so much money, we could do so much good work in the world, what should we do?! We can't touch it because it's Shabbat!?” And the Rebbe stopped and he prayed. And in front of the Rebbe and behind the Rebbe there was Shabbat. And to the right of the Rebbe and to the left of the Rebbe there was Shabbat. But in the area around the Rebbe...

This morning I want to talk about the difference one person can make. (*And it doesn't have to be a Rebbe.*)

In 1961, a low-profile assistant professor at MIT, Edward Lorenz, created a basic computer program to simulate weather. One day he abbreviated one of a dozen numbers representing atmospheric conditions, from .506127 to just .506. That tiny alteration dramatically transformed his long-term forecast and led to the development of a law called *sensitive dependence upon initial conditions*.

Lorenz' discovery was later popularized when he failed to provide a title for a talk he was delivering in 1972. The organizer, a man named Philip Merilees concocted the following title, "Predictability: Does the Flap of a Butterfly's Wings in Brazil Set Off a Tornado in Texas?"

Thus, the *law of sensitive dependence upon initial conditions* became better known as, “The Butterfly Effect.”

The butterfly effect describes how a small change at one place can result in large differences to a later state. The phrase has taken on many variations, such as “A butterfly flaps its wings in China causing a tsunami on the other side of the world.” Or, a more hopeful version: “A butterfly flaps its wings in New York causing a \$400,000 winner in Vegas.”

Although the butterfly effect may seem a bit esoteric, we see small examples of it in action on a regular basis: for instance, the Skee Ball machine at the arcades. I am among the masses who have thought they could score big easily. But a slightly different flick of the wrist, or a miniscule difference in the way the ball is held, or a fraction more force applied, produces a different result every time. And you end up losing all your quarters!

Science has now shown the butterfly effect to engage with the movement of any form of matter – including people.

Ray Bradbury, in his novel, “A Sound of Thunder,” tells a story of someone who travels back in time, accidentally steps on a butterfly, and as a result, changes the course of humanity.

Bradbury’s science fiction is now the real material of a motivational speaker and author named Andy Andrews, who uses the Butterfly Effect to address the question, “Do I really matter?” In one of his books, he asks, “Do I make a difference? When I *move*... when I *act*... when I *do something*... does the universe notice?”

I did a little research on my own to find out. So follow with me...

One of the most significant crises facing humanity worldwide is that over 1 billion people do not have access to safe drinking water – that is approximately 1/6 of the world’s total population.

5 million people die each year as a result of waterborne diseases. And most of them are children.

At any one time, approximately half of the world’s hospital beds are occupied by patients with waterborne diseases.

But the good news is that one man’s invention is changing the tide rapidly.

His name is Moshe Frommer. He is an Israeli scientist living in the town of Rechovot.

In 2005, Moshe invented a design for a special straw, lined with filters smeared with anti-bacterial resins he also developed, that could be used to drink from contaminated waters without fear of contracting any illnesses. His design and resins were proven to eliminate 99.9% of all bacteria and parasites in dirty water and effectively filter over 700 liters of water – the estimated amount of water an average person drinks in a year.

The device was named the LifeStraw. [show model]

Its genius is that it has no moving parts or electrical components and costs just about \$3 to manufacture, providing an inexpensive, durable product that could be brought to the developing world quickly and efficiently. Within a year, two million LifeStraws had been distributed in Kenya, Bangladesh, and Nigeria. By now, over five million are in use.

Dr. Frommer’s design of the LifeStraw won the Index Prize for 2005 – the largest monetary prize for design awarded to the product that has done most to improve the quality of life that year, and it was highlighted in a 2005 Time Magazine feature as, “one of the most amazing inventions of the year.” Forbes Magazine listed it among, “the 10 things that will change the way we live.”

Dr. Frommer is responsible for changing the world, and potentially, for improving the quality of life of 1/6 of its population.

Unless you say, that the man responsible for all this was really Mikkel Vestergaard Frandsen.

After all, Mikkel is the CEO of Vestergaard Frandsen, the Swiss based family business that financed, organized, and implemented the LifeStraw. Mikkel’s personal interests in developing technologies to provide clean water access led him to contact Dr. Frommer, who was hired to develop the anti-bacterial resins for the device. Mikkel is the one who accepted Dr. Frommer’s design, and brought it into reality.

So perhaps it is Mikkel who should be the center of our attention for saving countless lives with the LifeStraw and vastly improving economic conditions in parts of Africa so heavily impacted by waterborne diseases.

Or maybe... we should be thanking Mikkel's father, Mr. Torben Vestergaard Frandsen.

Torben became CEO of Vestergaard Frandsen in 1972 and oversaw its profitable expansion as a textile clothing business.

But in 1993, the heir apparent to Vestergaard Frandsen, Torben's young, 19 year old son Mikkel, decided to step away from the family business, which seemed uninteresting to him, and spend time traveling and working abroad in Lagos, Nigeria. Torben was wise to give his son space to mature.

In Nigeria, as a witness to the pain of waterborne diseases, Mikkel discovered his niche in the textile business and started developing water filters utilizing the resources of his father's company.

With his father's permission and encouragement, Mikkel worked with a team at Vestergaard Frandsen and developed small 6-inch plastic pipe straws lined with simple textile filters. Soon after, 23,000,000 were sold and the company was well on its way to selling off its clothing interests so that it could focus its attention solely on humanitarian disease control textiles.

So maybe it was Torben who we should honor, whose patient parenting gave space and the proper encouragement to his son, which afforded Mikkel the opportunity to carve out his own niche in the family textile business, which ultimately brought Mikkel to Dr. Frommer, who designed the LifeStraw that would improve the welfare of millions.

However... the real credit might be due to a nomadic group in West Africa called the Tuaregs who crafted the first archaic water filters in the region. They cut reeds, dried them, and placed pieces of cloth over one end to create straws for drinking water while they travelled.

While the reeds were not a practical solution for the millions of Africans that needed clean water daily, their idea was the starting point Mikkel used to develop a more sophisticated personal filter.

So better yet, it should be the Tuaregs who deserve the Nobel Prize for developing the prototype filter that would intrigue Mikkel, who had been patiently encouraged by his father Torben to carve out his own niche in the family textile company, that eventually developed into Mikkel's vision for a LifeStraw that he sought out Dr. Frommer to bring into reality to benefit the lives of millions.

Or maybe... it is former president Jimmy Carter who should be credited with this "most amazing invention."

For the past two and a half decades, the Carter Center has been devoted to eradicating a waterborne disease called guinea worm, through an aggressive program aimed at educating thousands of villages across Africa about guinea worm wound care, and the need for proper water filtration.

In 1986, there were 3.5 million cases of Guinea worm in 20 countries in Africa and Asia. That number has now been reduced by an astounding 99 percent, with fewer than 1,800 cases remaining worldwide. Scientists believe that as a result of the Carter Center's efforts, the guinea worm disease will be eradicated from the earth by 2015. This would make it only the second disease ever to be eradicated – the first was smallpox, and guinea worm would be the first disease eradicated without medicinal means.

In the mid-1990s, a chance encounter between Mikkel and former President Carter began the whole development of the LifeStraw. It was when Mikkel listened to Carter describe firsthand how a major

world disease was being eradicated just with education and simple water filters, that Mikkel first decided to get involved in the fight to defeat waterborne diseases.

So now, we see that it was really Jimmy Carter that deserves the credit for inspiring Mikkel, who stole a page out of the Tuaregs' playbook, after being afforded the opportunity by his father to broaden his horizons, that led to the vision of the LifeStraw, which utilized Dr. Frommer's expertise to develop a product that continues to improve millions of lives each day – including, by the way, the hundreds of thousands of people in Haiti and Japan who were given LifeStraws following devastating earthquakes and tsunamis there.

Or maybe... this award should go to Peter Cleary.

Peter is the US Communications Director of Vestergaard Frandsen and for the past 4 years, has been responsible for an extensive PR campaign in the states generating articles in major newspapers and magazines about the LifeStraw, a recent billboard in Times Square, and a variety of online videos.

When I spoke with Peter and explained to him that I was researching the LifeStraw for a Yom Kippur sermon, he replied, without hesitation – wouldn't it be a better subject for Tu Bishvat?! I was a bit shocked. What did Peter Cleary, a good Irish Catholic boy working for a Swiss company, know from the Jewish New Year of the Trees, let alone from Yom Kippur?! Well, it turns out he is married to a good Jewish girl from New York, and affords his two kids, Noah and Sophie, with a Jewish education. We ended our phone call wishing each other a Shanah Tovah!

Anyway, back to our story...

In my book, the salesman deserves a lot of credit. Peter has brought the LifeStraw campaign alive in America, highlighting an initiative that is off most people's radars, and one that the Carter Center has been driving forward for decades, inspiring people like Mikkel to get involved while building off the examples of nomadic tribes, who inspire ideas that would never come to fruition were it not for caring parents who encourage the unique interests of their children, allowing their creative concepts to emerge as potentially life altering inventions – in this case, a LifeStraw born in the coastal plains of Israel.

But maybe Peter doesn't deserve all the credit for raising awareness of the LifeStraw on this side of the ocean... a nod should definitely go to 10 year old Elizabeth Connelly of Akron, OH.

At the end of 2006, Elizabeth saw an article in "Scholastic News for Kids Magazine" about clean water projects in Africa and brought it to her 4th grade teacher, Sherry Farley. Mrs. Farley had just begun teaching the gifted program at the St. Barnabas School that fall and was doing a unit on problem solving. Elizabeth found a problem that needed solving and she wanted to know how Mrs. Farley was going to help her and her classmates solve the clean water crisis.

Over the next year, Mrs. Farley focused on issues relating to clean water in her class, and eventually came across one of the promotional materials that Peter Cleary had produced, where she learned all about the LifeStraw. Mrs. Farley shared with her class how others were helping to solve this problem, and young Elizabeth was determined to do her part.

She had been discussing the LifeStraw with her parents, and not long after, Elizabeth's mom found herself in a Wendy's restaurant and saw them selling color changing candy straws. Elizabeth came to school the next day with a sales idea: let's sell .50 cent candy straws to raise money for LifeStraws. Over the next two years, Mrs. Farley's class, led by Elizabeth, raised over \$3,000 to purchase LifeStraws for children in Africa.

So I say, enough awards for the rich and famous, let's give Elizabeth the honors for inspiring a whole new community in Akron, OH to make a difference in Mbano, Nigeria, by fundraising for a device that Peter Cleary hoped to promote, which had been inspired long ago by Torben Vestergaard Frandsen's textile company, founded originally in Kolding, Denmark, and now based in Switzerland.

But if we were to be honest, we'd have to acknowledge that Elizabeth had a little help...

His name is Gerry Jira and his single phone call kept the chain of goodness alive.

You see, Gerry is a 70 year old, devoted church go-er in Northfield, OH, formerly of Metairie, LA. One fall day in 2008, he was passing by the St. Barnabas School and noticed Elizabeth's class selling candy straws for LifeStraws. Their booth made Gerry think to call a nurse named Teresa Thomas whom he had met many months earlier in El Salvador.

Gerry and Teresa were both participants in a church mission that accompanied a group of volunteer doctors to Central America. Teresa had gone on the trip with the hope of convincing at least one doctor to help her with a public health project of her own in Nigeria. None of the doctors bit, but Gerry was impressed by her work in remote African villages, and they had stayed in touch every since.

So when Gerry saw the St. Barnabas kids selling candy straws, he called Teresa to tell her about the LifeStraw project. A month later, Teresa was speaking to 700 kids in the school auditorium about her work as a Christian missionary and nurse in Nigeria and her efforts to provide access to clean drinking water for her villages. The kids were inspired to know someone personally who could deliver the actual LifeStraws they funded, and they went on to raise an additional \$7,000 for Teresa.

At the same time, Mrs. Farley discovered that Rotary International had launched a national initiative to fundraise for the LifeStraw. So she had invited the local Rotary chapter to hear Teresa talk, and they ended up matching the funds that the kids raised. Later, Rotary International paid for the shipment of the LifeStraws and other medical equipment, and continues to sponsor Teresa's efforts in Nigeria until today.

By the way, did I mention that Teresa is my Aunt?

Some of you may remember her sharing about her experiences in Nigeria here in our shul a number of months back.

So, just to clarify, if I have this right, it's all because Gerry Jira listened to the Nigerian adventures of a passionate nurse while in El Salvador, and then happened to stumble upon Elizabeth Connelly selling candy straws, that he was able to connect Teresa with Rotary International and the kids of St. Barnabus, and send her back to Nigeria with a muleload of Life Straws to distribute amongst remote villagers that had not yet seen the millions of LifeStraws that had made their way into other parts of Africa.

But just when I thought that Gerry was my hero and Teresa my heroine, Gerry told me a story about a little five year old boy named Gabriel Greathouse who had heard Teresa's talk about Nigeria. He was so touched by Teresa's presentation that he went home and got his prized sticker collection and gave it to Teresa. Gabriel said that in her slideshow Teresa showed children smiling when she put stickers on them, so he thought she could take his stickers, along with the LifeStraws, and make more children smile.

So don't we all know who deserves that Index Award now? I'd give it to little 5 year old Gabriel from Akron, OH, for giving up his sticker collection to help kids smile in Nigeria.

When you think about it, little Gabriel flaps his butterfly wings and inspires the next generation of Elizabeth Connally's, who are encouraged by the Sherry Farley schoolteachers, who are connected to the outside by the Gerry Jiras of our world, who are inspired by the self-sacrifice of the Teresa Thomases, who bring life saving gifts to far out places that the Peter Clearys of the world remind us of, who are impressed by the patient Torben Vestergaard Frandsen fathers and mothers in our lives, who lead us to find our own unique niches amongst the Jimmy Carter causes on our planet, who build off the ingenuity of Tuareg nomads, who've inspired the Mikkel visionaries of our time, who open the door to the Moshe Frommers that design simple devices to change the world, that we all can't believe we didn't think of first!

Which means, that we can all make a difference.

No matter who we are. Or what skills we have. Or what age we might be... We all matter in this world.

I did forget one last important point.

The beautiful people of MBano, Nigeria would never have benefitted from the use of a Vestergaard Frandsen LifeStraw from the gentle hand of Teresa Thomas, and little Gabriel would not have touched the hearts of a hundred other children with his stickers, had it not been for Irene.

I don't know Irene, but it was she who asked Teresa to house sit for her one week in Fullerton, California a few years back. Irene also has a couple of cats. Teresa hates cats, but she loves Irene, so she agreed to do it as a favor. One house-sitting morning, Teresa overslept slightly and missed morning mass at the church she found her first day there. A gas station attendant told her to drive up Santa Anna Blvd and she'd be sure to find another church, which she did. Inside, she met Father Paul, an African man from Nigeria, who happened to be the visiting pastor, that day only, at the church Teresa just so happened to find after being directed by a gas station attendant.

Teresa tells me that it was something about Father Paul's spirit, and afterwards she asked him if he could direct her to do missionary work in Africa. And that is how my Aunt ended up delivering the LifeStraws to the remote villages of Mbano, Nigeria.

So when you really stop to think about it, it was Irene who asked for a favor, and it was Teresa who was happy to oblige, that makes this whole story relevant to you and me.

A simple act of kindness can move the world. A butterfly flaps its wings in California and the winds of change come to Nigeria. We can house-sit, or even just donate our sticker collections, and who knows the good we've caused.

This Yom Kippur, we affirm that all of us matter. The act of Teshuva – of returning to self, which is the spiritual work of these holy days, awakens us to our own butterfly wings.

The medieval philosopher Maimonides writes in his book of Teshuva (3:4), "When one performs even a single mitzvah, it tips the balance of one's merits and that of the entire world to the side of merit and brings deliverance and salvation to oneself and to others. This is implied by the teaching in Proverbs (10:25) 'A righteous person is the foundation of the world,' meaning, one who acts righteously, tips the balance of the entire world to merit and saves it."

With Maimonides words, we turn now to the Yizkor memorial service, as we also recall the ways in which our loved ones have impacted our lives and the lives of others, a further testament to the fact that every person matters.

Gmar Chatima Tovah – May we all be inscribed in the Book of Life.