EP 81 - A Query About Chaos Theory

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> *At times we worry about the unpredictable impacts our actions may or may have. What if our actions are like the Butterfly Effect: A small thing we do in one place and time having far-reaching effects in another. Are our worries warranted? What perspectives might help us worry less?*

Chaos Theory

- The Butterfly Effect is an example used to explain chaos theory
- Chaos Theory attempts to describe systems where small initial changes occur, which then have a wide range of potentially large, unexpected outcomes.

- Chaos Theory, in its very name, implies unpredictability.
    - It's an attempt to describe seemingly random results
    - It's assuming that in reality, there is an underlying order to the complex system
- Like many kids who came of age during the 1990's, I was introduced to this concept in the 1993 movie Jurassic Park, from the novel written by Michael Crichton.
    - Jeff Goldblum's character Ian Malcolm lays it out with examples of water droplets moving across a hand.
    - And his iconic line "Life finds a way" is used to explain the unpredictable dangers in the science being used.

Chaotic By Design?

- It's challenging to look outward on such a large scale. Or to predict the long-term impacts of your projects/art/mission/jobs
- I don't think we should ever underestimate the importance & potential of all the incalculable small decisions & actions we make.
    - Something as simple as a smile, a shrug, or stoic silence, in the right moment, might set things in motion for outsized, downstream effects that can change the universe.
    - Or not. You probably won't ever be aware of most of those effects anyway.
- Only with the processing capability & intelligence of something god-like could anyone claim any sense of design
    - As our species discovers move through scientific inquiry, and the application of technology, we're better able to grasp the workings of ever-larger systems.
    - For example: Increases in computing power, sensors, and communications tech has given us the ability to grasp the potential results of small variations in the many inputs to these systems:
        - Weather prediction

        - Financial system modeling
        - Political movements
    - There's a lot to be gained from these kinds of analysis: But they require money, technology, coordination, and dedicated focus.

Insight → Action

Given all that: Here are 8 ways we can make these insights actionable:

1. **Don't underestimate the potential impact of small gestures & actions**
    - Often it's not just the small action itself. It's how the combines with many other things preceding a moment, that occur afterwards, or happen at the same time.
    - Your actions live in a world with many others. Who could predict the impact?
    - Yet, even though changes usually come in drips, your action is part of the bucket being filled. And it may end up being big enough to be the drop that tips the bucket.
2. **Are you blaming butterflies?**
    - Is the world happening **to** you, or are you happening **within** the world?
    - Our tools of analysis continuously improve. But for all their help, we can't avoid our involvement in an infinite # of chaotic systems. ***That's just life.***
    - Many Buddhists believe in the theory that all of us are aspects of a singular universe expressing itself.
    - Ultimately, at some level, everything can be described in terms of a chaotic system.
        - You may need to zoom far out, to the level of a civilization or planet.
        - Or zoom far in: Electrons zipping about nuclei are as difficult to predict as global weather patterns.
    - We're just now starting to harness the powers behind quantum entanglement, large language models, and CRISPR gene editing.

    - Who can predict where these technologies will take our society and our understanding of even larger scale systems.

3. **Your work or art will likely have unintended impacts that are mostly out of your control**
    - All of our stories, games, courses, art, algorithms, and more are all attempts to mimic, distill, approximate, and abstract these complex systems.
    - These abstractions are useful frameworks for evaluation. But they will always have flaws since it's impossible to capture a chaotic system perfectly.
        - Consider the % of time invested versus the degree of potential impact.
    - Don't let this put you in a state of "analysis paralysis": Where you avoid making a decision because of overthinking or over-researching.
        - Often this is driven by a fear of making mistakes, being overwhelmed by the options, or a lack of perceived agency.
        - Or it can occur due to mental health conditions like anxiety, ADHD, or depression.
    - Sometimes making a decision, even if it ends up being a wrong one, is better than no decision at all. All lead to learning, all lead to unexpected results. Both positive & negative.
4. **Don't have blind trust in self-proclaimed experts or 'AI'**
    - Both are products of the information sets that informed them, which are inherently limited in different ways.
    - Both are capable of yielding unpredictable and inaccurate results.

      (They're both capable of predictable and accurate results too)
    - Are there ways you can better qualify information?
        - Encompass larger data sets to data relevant to you or your company
        - For example: Locating data keys, or connection points between your internal data with publicly available data sets.

    - This can yield greater insights & greater predictability into the impact of your potential actions.

5. **Your plans, hopes & efforts will likely get altered by outside & unpredictable forces**
    - Although the metrics of our work/art/products may not achieve our hopes/expectations for them, we may not be viewing the right metrics
    - The more random & chaotic the inputs to a system: The more unexpected the results
    - Be adaptable!
    - How much chaos do you account for? How much can you account for it at all?
    - Back to the butterfly example: How much are you fluttering your wings?
        - Are the flaps random or with purpose?
        - Are you flapping more than the environment/situation requires?
        - You're allowed to just be the butterfly: Living within its means, no concern for what is out of its control (tornadoes in far-away places), and out of its ability to comprehend.
        - Embrace the 'flow state' where self-evaluation and concern fall away & life is lived most fully & in the moment.
    - Understand the impacts (positive and negative) your actions can have if you push on an unpredictable system.
        - Take children: You can't predict when a child will level up in a skill, activity, or sport. Pushing them too hard or pressuring an organization to level them up too fast increases the unpredictability of the results.
6. **We should remain open to unexpected influences that can change our perspective & pivot us in the direction/creation/execution of our work**
    - For example, consider the effects of your organization's structure:
        - If it's too tight & regimented, it restricts the ability of any individual to make decisions

    - This results in them having less agency & less incentive to pivot or enhance the company's mission.
- That said, complex systems tend to be more resilient: Not beholden to the whims of small changes/elements. Even if effected by combinations of them.
- Your company will likely survive any one decision. It'll likely survive if you leave.
    - How central are you to that system? → **This is your locus of control.**

7. **Small, seemingly innocuous lapses in attention & judgement can result in devastating impacts on others**
    - An impatient or anxiety-driven tendency can cause us to take an action that brings our attention to a more pressing reality
        - For example: Reading a text message while driving a vehicle.
        - Distraction from that reality brings the risk of catastrophic impacts.
    - This can also work in positive ways:
        - Two boys on a beach in Greece are playing soccer. An errant kick sends the ball into the Mediterranean Sea. The ball is gone: And drifts on the sea for days, travelling over eighty miles.
        - A tourist gets swept out to sea by a strong current while vacationing at another beach. He spots the soccer ball and clings to it, waiting 18 hours until rescuers find him.
        - Amazingly, the cause and effect get linked because of the family of the boys recognize the ball when news of the rescue hits their TV a week after they had lost it.
8. **Our entire existence exists as a result of eons of interactions & happenstances**
    - How lucky are we to have a chance to play a part in this miracle of existence!
    - This is a challenging mentality to maintain consistently

- But it can help us maintain perspective, our sense of humility, of humanity, and feelings of gratefulness for where we are.

🗣️ Episode 81 Quote:

Today's quote is from author Sylvester McNutt III - and cuts right to the point of taking action:

> *"Overthinking is the biggest waste of human energy. Trust yourself, make a decision, and gain more experience. There is no such thing as perfect. You cannot think your way into perfection, just take action."*