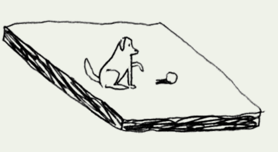

The Truth About Cocoons *What caterpillars really go through in there has applications for our moment.*

By Sam Anderson

Every child knows about cocoons. They're one of the first things we learn about the natural world. What the ABCs are to language, cocoons are to biology. They introduce us to the wonder of metamorphosis: A little blobby squirmy thing disappears into a sac and emerges as a flamboyant colorful flappy thing. Magic! In fact, that is exactly how we tend to learn about it — as one of nature's great magic tricks, if not inexplicable then largely unexplained. The emphasis always seems to be on the before and the after, never the during.

Lately, I have found myself wondering — as I sit here hunched inside my dark house, for infinity weeks, hardly moving, wearing the same green sweatshirt while eating the same four snacks — about cocoons. I don't really care anymore what goes in or what comes out; those are questions for different times, for ancient pasts and distant futures. I'm interested in precisely the part of the story that tends to be skipped: the confinement, the waiting, the darkness, the change.

What is it actually like inside a cocoon? Is it cozy and peaceful? Or cramped and dim? Is the bug's stay voluntary, involuntary or something in between? And what really happens during that seemingly magical change? Is it inspiring and wondrous? Or is it unpleasant and grim? What did I not learn in kindergarten?

It turns out that the inside of a cocoon is — at least by outside-of-a-cocoon standards — pretty bleak. Terrible things happen in there: a campaign of grisly desolation that would put most horror movies to shame. What a caterpillar is doing, in its self--imposed quarantine, is basically digesting itself. It is using enzymes to reduce its body to goo, turning itself into a soup of ex-caterpillar — a nearly formless sludge oozing around a couple of leftover essential organs (tracheal tubes, gut).

Only after this near-total self-annihilation can the new growth begin. Inside that gruesome mush are special clusters of cells called "imaginal discs," which sounds like something from a Disney movie but which I have been assured is actual biology. Imaginal discs are basically the seeds of crucial butterfly structures: eyes, wings, genitalia and so on. These parts gorge themselves on the protein of the deconstructed caterpillar, growing exponentially, taking form, becoming real. That's how you get a butterfly: out of the horrid meltdown of a modest caterpillar.

The caterpillar I know best was created, out of scraps of painted paper, by a man who grew up in Nazi Germany: Eric Carle. "The Very Hungry Caterpillar" is a small, eccentric masterpiece — a children's book, yes, but also a formative exploration of the complex nature of change. Like many children, I read the book so many times that it blended into my psyche as a kind of background color. Years later, I read it again so many times with my own children that it blended into their psyches too, and back into my own again, this time in a deeper color.

Recently, when I reread "The Very Hungry Caterpillar" alone, in quarantine, it felt less like reading than remembering. And yet I was also slightly surprised. Carle's caterpillar is, of course, more than just a caterpillar; it is a classic existentialist antihero — a lonely creature of pure need, guided by only its own ravenousness, skirting the knife's edge between self-destruction and growth. What surprised me this time was that so little of the book is devoted to that final act of transformation — the magic change we are always taught to anticipate. Mainly, the book is a catalog of eating. Ridiculous, ceaseless, maniacal, necessary but also unwise eating.

Things start out fine. The caterpillar tunnels through one food after another: an apple on Monday, two pears on Tuesday, three plums on Wednesday and so forth. He always leaves a little hole in his wake, a literal hole in the book's pages — his hunger is so powerful that it begins to destroy the very story of his hunger. By Saturday, the caterpillar has abandoned all sense and started bingeing on junk food: a piece of chocolate cake, an ice cream cone, a pickle, a slice of cherry pie, a cupcake — the kind of caloric intake, surely, that will not help an insect with its ultimate long-term goals. Sure enough, the caterpillar ends up curled at the bottom of the page with a stomachache, eyes squished and drooping, mouth compressed to a miserable line.

This moment in the book hit me deeply. Staring into that caterpillar's wretched face felt like looking into a mirror. In quarantine, I, too, have been ravenously bingeing. When I pass through a room, I leave it practically riddled with holes. I have worked my way through bags of chips, bags of gummy candy, bags of unsalted walnuts, jars of peanut butter, tubs of ice cream, boxes of cereal. And the consumption goes far beyond food. Along with the rest of America, I devoured the cursed docu-series "Tiger King" with hardly a break. I have been playing so many hours of the Nintendo game "Animal Crossing" that my wife sometimes peeks cautiously into the room and asks: "Is there some way I can help you? Are you sure you want to still be playing this?"

I am speaking to you now from the inside of my cocoon. You, presumably, are listening from inside your own. It could be an apartment, a room, a closet or a farmhouse out in the middle of nowhere on the site of an abandoned commune. Perhaps, like me, you have been living a self-destructive quarantine cocoon life. Maybe you are not using junk food or video games to numb the pain, but you are probably using something. The data suggests that most of us are. A friend recently sent me his phone's weekly screen-time report. It was down 15 percent, to 10 hours 50 minutes a day. Utility companies say that people are sleeping in — spikes in energy use that typically occurred around 6 a.m. are now happening much later. The very shape of society is dissolving in front of our eyes. "Workdays," "mealtimes," "holidays" — all these rituals that were designed to help us shape our days have now been drained of meaning. Society has become, in large part, boneless. A soup of ex-society.

Watching it happen, all over the planet, has been horrible. There is no other word for it. It has been horrible inside overrun hospitals — the multiplying hopelessness, the gasping of those who can't be saved. It has been differently horrible inside our own houses, where we wonder how to help as we refresh internet spreadsheets and watch the numbers rise: cases, tests, deaths. It has been horrible to read about the stories behind those numbers. It has been horrible to watch for tiny signs of illness in the people we love the most. Horrible to feel our own foreheads, wondering if we are warm. Horrible to be warm. Horrible to be cool. Horrible not to be sure.

How do we even begin to process all of this — this cataclysm that is happening simultaneously in slow motion and all at once, on distant continents and inside our own cells? Months in, we still have no idea when it will end or what we will all come out looking like. The metamorphoses are happening mostly in private, all over the place, in billions of individual pods — acts of internal self--destruction and rebuilding, subtle shifts and whole revolutions.

I keep asking myself, as pretzel crumbs spill down the front of my sweatshirt, what I have learned from quarantine. On most days, honestly, it feels like nothing. The main question we seem to answer in quarantine is circular: How would we handle ourselves in quarantine? On particularly bad days, as I blink myself awake at 11 a.m. and promptly reopen Twitter, I feel that I've actually learned less than nothing — that my knowledge is rolling backward. Before the world shut down, I swear on my Cool Ranch Doritos, I was working on myself, exercising regularly and making plans and sticking to them. I was generating lists, and lists of lists, and lists of lists of lists. I listened to a whole audiobook about forming good habits. But now all of that has gone away. For the moment at least, in the face of this horror and sadness and confusion, as I watch the curves grow worse on the terrifying graphs, my fantasies of self--improvement have evaporated. Maybe they weren't essential. Maybe they needed to be rethought. Or maybe they just needed to go dormant for a while.

A caterpillar doesn't choose to go into its cocoon. "Cocoon," actually, in the case of butterflies, is the wrong word. My apologies to Eric Carle, but it is actually a chrysalis, a hard shell that was inside the caterpillar's body the whole time. From the ancient Greek chrysos, "gold" — a golden envelope of internal self--destruction. In order to expose the chrysalis, the caterpillar just has to slough off its chubby outer layer. It seals itself inside itself. No decision is really made; it's just a matter of hormonal cascades — cues beyond the understanding of the creature being cued. The caterpillar stays inside because it has to. And when it comes out, it is a different thing. We tell that story one way. The caterpillar no doubt experiences it very differently.

Is a butterfly's life any better than a caterpillar's? Was all that suffering in the cocoon worth it? Is a volcano happier after it erupts? These are children's questions. It doesn't even make sense to ask. The bug has no choice. The cocoon is forced upon it. And then nature runs its course.

But here is one thing I have learned in quarantine: The world can stop. This is not a small thing, nor is it easy. It is not necessarily good or bad. History teaches us, again and again, that change does not mean progress, that metamorphosis does not mean improvement. When society dissolves, we — the ones who make up society — dissolve right along with it. When our familiar structures become unrecognizable, we become unrecognizable to ourselves. This means suffering. We are confused and miserable and terrified and heart-broken. We find ourselves continually annoyed with our families. We sleep too long or not long enough, eat too much or not enough. We stop exercising and attend absurd virtual meetings meant to simulate work or school. We clap outside at 7 p.m.

But I believe that the situation, as bleak as it may seem, may also contain the seeds of its own transformation — somewhere very deep in the formless mush.

Let's not forget that in our horrendous confusion — in spite of it, because of it — we managed to do something amazing. We chose to go dormant. We changed almost everything in the world, almost overnight. This required a kind of collective action that, frankly, would have struck me as impossible five months ago. There are, of course, outliers, loudmouths and nihilists and malcontents. They will always exist. But enough people are not that. Enough of us have found enough reasons to change, and it has made an actual difference. We are in the middle of creating whatever the new world will be. We did it, and we are doing it, every day.

Meanwhile, I am still sitting here in my chrysalis, ravenous, sad, confused, feeling simultaneously changed and unchanged. Perhaps one of these afternoons, many months from now, I will be nibbling away at whatever happens to be in front of me, and it will turn out not to be more gummy bears but something else, the actual wall of my enclosure, and I will eat enough to make a hole, and then I will look out, with a whole new kind of eyes, to see what sort of world is waiting for me, and what I have become in it.

Illustration by Brian Rea.

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