

Our Body
is Our Anchor
to the Present

Monica C. LoCascio

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For my grammas, Dolores and Josephine, and their grammas.



We are Time
Time brings Chaos ∞ Trauma
Heal Trauma by putting back into Order

Trauma is the moment where time splits. Trauma is when one realizes that there is not one story line. Healing is when we give ourselves space to digest our lives, to process within that space. Healing requires coherence.¹

¹ Voice recording, 22/09/2020

INTRODUCTION

We are living through a major shift in the way humanity relates to its surroundings, safety, and mortality. Everything is speeding up and complexity is blooming. At best, the year 2020 has been a turning point for the human species in terms of how we see ourselves in the world, in relation to each other, the environment, and ourselves.

The residual effects of the global COVID-19 pandemic that started in the winter of 2019 will most likely rage on for the foreseeable future. At the same time, the prejudice and short sightedness of generations of patriarchal, capitalist, white supremacist and colonial power have left us with climate change and systemic inequality, the effects of which will continue to play out for generations to come in environmental, financial, geological, and meteorological ways we cannot predict. We will have to learn to live with the chaos and its uncertainty. Indeed, living through this moment in time, and looking into the many potentially catastrophic futures, is an experience of not only personal, but collective, global trauma.

Trauma is not an event, story or memory. Trauma is *of the body*, and embedded in the body, in knees, hips, bellies and necks. Trauma automatically affects our deepest survival mechanisms, and can trigger us to behave in unconscious, detrimental patterns in misguided attempts of self-preservation.

As I will show later in this paper, trauma can change the very structure of our connective tissues and can be inherited epigenetically. It can haunt and hurt families and communities for generations. The lived experience of trauma by one person can be passed down to their children and their children's children via the expression of their genes. Trauma might even be passed down as a memory.

Trauma skews our sense of time and reality. When a traumatized person is triggered, or reminded in any number of ways of a past trauma, the physiology and neurology of our body and brain are transported to another moment in time. It takes us out of time, jarring our linear and logical sense of where we are and what happens next. We flashback to terrifying memories, and we flash forward to worry about the future and how we might prevent those terrible things from happening again, and as we do the neurological and physiological mechanisms of our bodies flip into the survival mode we were in during the initial traumatizing event; our bodies experience the event again.

Traumatic memories are fragmented, choppy and disorganized. Add to all of that the debilitating somatic repercussions from the physiological, hormonal and behavioral changes that trauma can induce, and one can understand why people suffering from embodied trauma can feel like they are trapped in a constant state of alert, disorder and chaos.

These experiences *feel* outside of present time. They are exhausting, can take up all of our energy by continuously taxing our nervous system, and can cause chronic stress and illness.

The philosophical implications of the quantum mechanics of time also play in here. The non-linearity of time—the idea that time does not exist as we sense it, that it is not linear but rather a thermodynamic

cloud of potentialities—brings us to the idea that the only thing actually grounding us in this present moment is our body. We experience time because we experience it *with our bodies*. We exist in and move through space, and in doing so create memories and expectations that give us our sense of past, present, and future. Our perception of time is what ultimately creates our story of “me.”

Many healing modalities proven to help those suffering from trauma-related symptoms are somatically oriented, and rhythm-based. They employ repetitive movements that allude to the ticking of the clock, beating of the heart, and the breath. These are practices that bring one back to the present time and place by bringing us back to our bodies, and connecting us to the soothing rhythm of the known here and now.

This thesis is both an exploration and documentation of how my own artistic practice developed alongside my trauma, and how it has always served as a way for me to heal. It is the product of actively asking the question: “By what mechanisms do we remember with our body? How does my body serve as the platform for the transformation of trauma?”

This is not a research paper encompassing all the myriad ways in which these subjects overlap and intermingle. Rather, it is a weaving together of the threads that have helped bring light and clarity to my own struggle with and healing from trauma.

I write about my understanding of trauma, how it is experienced and imprinted in the body, how that relates to the perception of time, and the theory of its non-linear nature. I illustrate how one can use rhythmic, artistic practices to soothe and heal, and how many intuitively have.

This paper is *of my head*, and it looks like what trauma feels like, because I am the traumatized person I write about. The form of this essay is the physical manifestation of how this train of thought and research might look if it were pulled out of the liminal space of my consciousness and given form. It is fragmented, jumpy, idiosyncratic and chaotic. It looks like how trauma feels to me on a good day.

This text is peppered with extensive quotes from books and papers that had a profound effect on my own understanding of my body, trauma and time, including *Women, Trauma and Visual Expression* by Amy Stacey Curtis, *The Body Keeps the Score* by Bessel van der Kolk, *My Grandmother's Hands* by Resmaa Menakem, and *The Order of Time* by Carlo Rovelli. Included in these citations are descriptions and definitions for things that, until reading about them, felt like my own personal struggle, nameless and hard to express, and mine alone. Woven between the essay and citations are short autobiographical vignettes that highlight my story and illustrate my tendency to look for examples of things I can point to in order to anchor my own traumatic experience and repercussions within a bigger lens of trauma studies.

I will use Chicago style citations because my family has been “from there” since they emigrated from Poland and Sicily in the early 20th century.

The practical work on the other hand, is *of my body*. Of course all artists use their body in some way to create their work, but in the process of conducting materials research I ended up creating a set

of rhythmic somatic and artistic practices that are perfect manifestations of the theory about which I am writing.

A proxy for my body, and reminiscent of religious shrouds or grandmothers' hands, colossal sheets of bacterial cellulose display multiple generations of their culture. Embroidery mirrors the thermodynamic nature of time and the pattern of my own rhythmic, soothing mark-making. Hair is crocheted into intricate, interlocking patterns on twisting strands echoing DNA's double helix. Sound compositions create vibratory space to resonate in bodies while video documentation of material experiments become performance of somatic rituals.

My materials and methods of making express the capacity of the body to store trauma and memory mechanically and metaphorically; they reveal my own practice of trauma processing and somatic therapy.

The work is full of metaphors and analogies because the processes and materials from which it comes directly reflect the processes and theories I am writing about. I had no idea when I started with bacterial cellulose and hair how rhythmic, trance-inducing and healing the process of working with them would be. In making these large pieces, I was forced to engage from the very beginning in rhythmic and repetitive mark-making—the practice which I thought would only come into play in the final embroidery phase of the project. Even the behavior of the bacterial cultures I was working with began to embody, in ways I could never have planned, perfect examples of epigenetics and lineage. The very act of creating the practical work led me to further insights on the topic I had already started writing about.

In the process of authentic experimentation and creation, I found a clarity in the process, materials, and work; a simplicity that feels very much in tune with the power and serenity that comes from creating this work, and in doing so being able to ground in a soothed body.

Trauma is a vast subject: it is complicated and subjective and different for everyone, but healing from it on an individual basis can lead to a collective resonance, a ripple effect on future generations. When every life, every person, is given the opportunity to heal trauma, which benefits not only themselves and their quality of life, but also the lives of their children, their children's children, and everyone around them.

Healing from our trauma is therefore a critically important endeavor. Who knows how our world might look if those traumatized by the wars of the 20th century had been given time and space to grieve and resources to heal and process rather than directives to get back to work donning stiff upper lips and mantles of toxic masculinity? What would be the state of our natural world if our society at large felt safe and cared for enough to fight for the good of all rather than the quick and fast benefit of themselves? Rather than pushing trauma aside, or swallowing it whole, let us all accept the responsibility of healing our trauma for the benefit of humanity, and the planet. We must, or we will continue to pass on our hurt, raise and enable future tyrants, and perpetuate dangerous cycles of hurt people hurting people.

This body of work has helped me understand not only my own trauma better, but that of others. It has triggered me, but it has also helped me to further heal. I hope that this paper might help others do the same.

I am sitting in my kitchen in the 17th district of Vienna, adding edits to this paper, as bone broth simmers on the stove. Yesterday, a gunman, maybe two, attacked and killed people out for their last bit of freedom before the next lockdown. The lockdown started today. The US elections are today. The whole world feels like it is about to crack and it's all just too much to feel. I can't feel it yet. I don't want to. It's too much.

WHAT IS TRAUMA?

“Trauma” is not simply an event, or a thing that has happened. It is not encompassed by the hallucinatory flashbacks or panic attacks. It is not solely the behavioral or physical changes that occur for bodies and the bodies around them, triggered feelings, or emotional responses.

Trauma is all of that multiplied against itself as a somatic, lived experience. It is fractalized, and multi-faceted. It is totally idiosyncratic and unique to each person. It is a completely unpredictable “before”, “during” and “after”.

Trauma is not a flaw or a weakness.²

Trauma is not something that one can protect themselves from or explain away. Unfortunately, trauma is also common, and increasingly so as our world becomes more volatile, violent, susceptible and unequal.

Trauma is a widespread, harmful and costly public health problem. It occurs as a result of violence, abuse, neglect, loss, disaster, war and other emotionally harmful experiences. Trauma has no boundaries with regard to age, gender, socioeconomic status, race, ethnicity, geography or sexual orientation.³

Trauma is triggered by events. Events happen all around us, and they do not occur in a vacuum. We see, smell, feel, taste, and move through the experiences. We sense them in our bodies.⁴

When we experience something threatening our hormones, muscles, digestive system, hearts, indeed every part of our body, respond in a way that will prepare us in order to escape that danger. Without thinking we are propelled into fighting or running for our life, or freezing and playing dead. Known as the fight, flight, or freeze (some would also add annihilate to those three⁵) response, all of these reactions in one way or another help us to survive an event that threatens our existence.

² Menakem, Resmaa. *My Grandmother's Hands: Racialized Trauma and the Pathway to Mending Our Hearts and Bodies*. Central Recovery Press (CRP), 2017, 7.

³ SAMHSA's Trauma and Justice Strategic Initiative Workgroup: Larke N. Huang (lead), Rebecca Flatow, Tenly Biggs, Sara Afayee, Kelley Smith, Thomas Clark, and Mary Blake. *SAMHSA's Concept of Trauma and Guidance for a Trauma-Informed Approach*. Substance Abuse and Mental Health Services Administration, Department of Health and Human Services, USA, July 2014. Pg 2.

⁴ Menakem, *My Grandmother's Hands: Racialized Trauma and the Pathway to Mending Our Hearts and Bodies*, 177.

⁵ Ibid., 5.

Whenever we feel threatened, we instinctively turn to the first level, social engagement. We call out for help, support, and comfort from the people around us. But if no one comes to our aid, or we're in immediate danger, the organism reverts to a more primitive way to survive: fight or flight. We fight off our attacker, or we run to a safe place. However, if this fails—we can't get away, we're held down or trapped—the organism tries to preserve itself by shutting down and expending as little energy as possible. We are then in a state of freeze or collapse.⁶

Trauma is an experience of the body. It is what happens in the body when that body witnesses or experiences something that it perceives as threatening or dangerous, something that is “too much, too fast, or too soon.”⁷ The body is then overwhelmed by an “emotional... [and] spontaneous protective mechanism”⁸ which is imprinted “at lightning speed”⁹ in its muscle memory, ready to be reflexively deployed in the future so that body will never again be caught unprepared for or damaged by that specific threat.

We can have a trauma response to anything we perceive as a threat, not only to our physical safety, but to what we do, say, think, care about, believe in, or yearn for.¹⁰

Trauma is a “normal reaction to abnormal conditions and circumstances,”¹¹ and no two bodies will experience or internalize it in the same way. An event that one body witnesses and internalizes as a trauma, another might view as fascinating, or might not even notice.¹²

Most people experience trauma if an experience they have:

- *Is unexpected (for example, the 2007 collapse of a highway bridge in Minneapolis).*
- *Involves the death of many people, especially children (for example, the Tulsa race riot of 1921).*
- *Lasts a long time or repeats itself multiple times (such as Hurricane Katrina and its aftermath).*
- *Has unknown causes (for instance, when your partner suddenly and mysteriously disappears).*
- *Is deeply poignant or meaningful (such as the killing of twenty-seven people—twenty of whom were children between the ages of six and seven—at Sandy Hook Elementary School.)*
- *Impacts a large area and/or many people (for example, an earthquake, a plague, a terrorist attack, persecution, or enslavement).¹³*

6 Bessel van der Kolk. *The Body Keeps The Score: Mind, Brain and Body in the Transformation of Trauma*. Penguin Books, 2015, 80.

7 Menakem, *My Grandmother's Hands: Racialized Trauma and the Pathway to Mending Our Hearts and Bodies*, 7.

8 Ibid.

9 Ibid.

10 Ibid.

11 Ibid., 205.

12 Ibid., 43.

13 Ibid., 7.

My parents moved to Riyadh, Saudi Arabia in 1980 to teach at the American School. I was born there on April 30, 1984, in a small clinic next to the airport. We lived on a compound – a big beautiful subdivision of identical houses surrounded by a high mud wall with a gate guard. Just outside the wall was miles and miles of desert and a mosque close enough that I could sing along with the prayer calls.

All the teachers that worked at the school lived there. All the kids could run around after school and on the weekends, our parents not having to worry about anyone or thing because we were protected by the big wall and all the other teachers' eyes.

Another family on the compound also had a baby on April 30, 1984. His name was Luke, and we were born 5 minutes apart in the same small room.

Only the introduction of an observer introduces time. This is the ability to distance oneself from the now, to be mentally elsewhere, to compare. This leads to the creation of time consciousness.¹⁴

Our parents were very close. When we were babies, his mom would bring him over. We had playdates in our diapers and shared drool-covered toys. Around the age of four we even shared our first kiss, underwater at the compound pool. We would eventually drift apart as he became one of the pack of boys that roamed wild around the compound that all the teachers and their families lived on, while I became busy playing princess with the other daughters of my age group. We would still have our birthday parties together every year, and would eventually have little siblings of the same age. Luke felt like a part of me, like me.

I remember so clearly his raspy voice, a perfect compliment to my high-pitched, sing-songy "Minnie Mouse" timbre.

We wouldn't see each other again after my family moved from Saudi Arabia to Kuala Lumpur, Malaysia in 1990.

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Spring break, 1996. I am 11 years old. It is the last vacation we have as a family before we move from KL to Rabat, Morocco. My dad and brother pack their backpacks and go to try to climb Mt. Kilimanjaro while my mom and I head to Bali. We had been there before, but mom was a music teacher, and before we left Southeast Asia she wanted to do one more tour of the island and see and hear

¹⁴ Wittmann, Marc, and Translated by Philippa Hurd. *Altered States of Consciousness: Experiences out of Time and Self*. Cambridge, MA: MIT Press, 2018, 70.

the Monkey Dance, the shadow puppets and the gamelan one more time.

It is a blissful week, just my mom and me. The server at our restaurant tries to give me an alcoholic welcome drink because as an 11 year old I am already my full adult height and body and look about 10 years older than my age. I am constantly stared at. I am ashamed of my big bones.

We arrive home to our big house at the end of Jalan Kantan Street in the suburbs of the city, on a typical bright and humid-as-hell day. The taxi drops us off in front of the gate, the dogs ran up to meet us, jumping against the iron bars. My dad comes outside and grabs them by their collars so we can make our way inside without them escaping into the jungle as they love so much to do.

We walk in, take off our shoes, and the marble feels cool and smooth under my bare feet. My dad asks us to sit down, he has something to tell us. We sit on the beige sofa, its fabric rough. My brother isn't there, I don't know where he is.

"There's been an accident. Luke Hanson was on a school trip with his class in Switzerland. A small boulder rolled off the top of the mountain and gathered snow. It hit him and he was killed instantly." The boulder, when it hit him, had grown to the size of a VW Bug.

These are the words I will remember. These are the words I use when I retell the story, to intimate partners and therapists.

Memories that are retrieved return to the memory bank with modifications... the act of telling itself changes the tale.¹⁵

I don't cry. I just go up to my room, lay down on my bed, and watch the blades of the ceiling fan going round and round. I remember this view so clearly.

If dissolution of the self occurs, then the understanding of time and space dissolves as well.¹⁶

Trauma, in that it helps us remember that which threatened us, is a "highly effective tool of safety and survival"¹⁷ *when it is metabolized and processed correctly by the body*. This process is nicely exemplified by the animal that will shake its pelt repeatedly after it successfully runs away from a predator. It is the

15 Van der Kolk. *The Body Keeps The Score: Mind, Brain and Body in the Transformation of Trauma*, 191.

16 Wittmann, *Altered States of Consciousness: Experiences out of Time and Self*. Cambridge, 26.

17 Menakem, *My Grandmother's Hands: Racialized Trauma and the Pathway to Mending Our Hearts and Bodies*, 13.

animal's body's way of physically expelling the stress hormones and pent up spastic reflexes associated with the recent traumatic event so that they don't remain as stress in the body. The animal processes the experience with repeated bodily motion.

[Breuer and Freud, in their 1893 paper explain that] unless there is an "energetic reaction" to the traumatic event, the effect "remains attached to the memory" and cannot be discharged. The reaction can be discharged by an action—"from tears to acts of revenge."¹⁸

Humans also have this capacity and inclination. Many have experienced involuntary shaking after a particularly stressful experience like an accident. And after a natural disaster it is not unusual to see a whole community spring to action. Rather than giving in to the despair of a community in ruin, they rush to rescue and repair their community. This is not only a way to move forward on a societal level, but also a natural inclination of our bodies to process and expel the stress hormones released into our blood streams and the tension from our muscles. It is a way to physically metabolize the trauma caused by the event, and thereby release it from the body.

The problem of trauma arises when one does not have the ability to process it, when it doesn't get metabolized. Without metabolization, without this physical release, the residue of the trauma becomes stuck, woven into the very makeup of one's physiological processes, causing one to have to relive the traumatic event, and the physiological responses to it, over and over again.

Ingrid Renner and I have been friends for years. Our parents are teachers together at the International School of Kuala Lumpur. I am in third grade, she's in second. Her dad, Gil, is the biggest man I have ever met.

It's a typical weekend. The air is so thick, and the fans are on high against the oppressive heat. I slept over the night before, and we're now in the living room, MTV is on the TV, we are dancing barefoot on the marble floor.

Suddenly, the whole house shakes as a deep rumble almost shakes us off our feet. The electricity clicks off in the whole house. There is a sickening silence.

We run out front to see if we can figure out what happened. A man speeds by on a bike.

One of the buildings of Highland Towers has fallen.

The Highland Towers collapse was an apartment building collapse that occurred as a result of a major landslide on 11 December 1993 in Taman Hillview, Ulu Klang, in

18 Van der Kolk. *The Body Keeps The Score: Mind, Brain and Body in the Transformation of Trauma*, 182.

Selangor, Malaysia. The collapse involved Block 1 of the Highland Towers, resulting in the deaths of 48 people and led to the complete evacuation of the remaining two blocks due to safety concerns.

The Highland Towers consist of three similar 13-story blocks, built in phases between 1974 and 1982 at the western base of a steeply sloped hill which was later terraced extensively in the early 1980s. These towers were home to affluent middle-class families; a sizeable percentage of the residents were expatriates...

Block 1 collapsed after 10 continuous days of rainfall led to a landslide after the retaining wall behind the Block 1 of Highland Tower's car park was destroyed.¹⁹

My dad comes to get me hours later. We drive towards the site. I'm standing in the middle of the road close to where the police tape has gone up. There is still dust in the air. Only the top of the building is visible. There is rubble all around it, and cop cars, fire engines, ambulances.

The top floor has crumbled to the ground. There is a toilet seat hanging down from a toilet that is still stuck to the now vertical bathroom floor. The seat is swaying softly in the breeze.

A few survivors, including a baby, are pulled out of the rubble. One later dies. The rescue teams find a message tied to a wire that indicates signs of life, tapping is heard, but the bodies are never found. I don't know anyone who lived in that building, but I think about them constantly. The last conscious moments of their life as the building falls. Others trapped in the dark, knowing they will die.

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I'm in our van, on our way to school, I can't pull in enough air. "I can't breathe all the way," I finally tell my parents. "I can't get enough air."

They bring me to the hospital. The doctors examine me. There is nothing wrong with me.

I write a story shortly thereafter in school, about what would happen when I died and went to heaven. I illustrated the pages. I don't know which adult thought that it warranted more attention.

19 "Highland Towers Collapse." *Wikipedia*, 5 Aug. 2020, https://en.wikipedia.org/w/index.php?title=Highland_Towers_collapse&oldid=971332703.

I go to see a school counselor. They ask me a few questions and tell my parents I'm fine. I feel like I caused a fuss for writing about heaven, that I shouldn't have done it. I forget all about the whole episode after that.

Many bodies that are unable to process a traumatic event will become diagnosed with Post Traumatic Stress Disorder, a mental disorder that can occur in people exposed to traumatic events. PTSD affects up to 3% of adults at any one time, with lifetime prevalence rates at between 1.9% and 8.8%.²⁰

*Post-traumatic stress is the result of a fundamental reorganization of the central nervous system based on having experienced an actual threat of annihilation, (or seeing someone else being annihilated), which reorganizes self experience (as helpless) and the interpretation of reality (the entire world is a dangerous place).*²¹

In normal circumstances, the prefrontal cortex of our brains, specifically the medial prefrontal cortex or “watchtower,”²² enables us to examine our environment, understand the different options that we have for action and its potential repercussions, and make a conscious choice about which direction to take. We are able to “calmly and objectively” take a survey of “our thoughts, feelings, and emotions... and then take our time to respond.”²³

However, when unprocessed trauma is later triggered by an event in the present, activity increases in the subcortical brain regions responsible for emotions, the limbic system springs into action, and activity decreases in the frontal lobe, particularly the medial prefrontal cortex.²⁴ Folded within the limbic system is the amygdala, a region of the brain primarily associated with the mediation of many aspects of emotion and memory.²⁵ It is the “smoke detector in the brain”²⁶ that “determines whether a sound, image, or body sensation is perceived as a threat”.²⁷

Mid-July, 1990, I am 6 years old. We are getting ready to fly, for the first time, to Malaysia. We spent the summer, as we always did, visiting relatives in Cedar Lake, Indiana, a tiny town about 40 minutes south of Chicago on highway 41. We have a little summer house on the corner just across the intersection from where my gramma and grampa lived on a cul de sac.

There was not a lot to do, just the usual outside summer activities like riding bikes and swimming with the neighborhood kids. But I especially like sitting inside on the carpeted floor of my gramma

20 Bisson, Jonathan I et al. “Post-traumatic stress disorder.” *BMJ* (Clinical research ed.) vol. 351 h6161. 26 Nov. 2015, doi:10.1136/bmj.h6161.

21 Van der Kolk. *The Body Keeps The Score: Mind, Brain and Body in the Transformation of Trauma*, 256.

22 Ibid., 62.

23 Ibid.

24 Ibid., 63.

25 C. Daniel Salzman. “Amygdala.” *Encyclopædia Britannica*, 27 Feb. 2019, <https://www.britannica.com/science/amygdala>. Accessed Oct 3, 2020.

26 Van der Kolk. *The Body Keeps The Score: Mind, Brain and Body in the Transformation of Trauma*, 62.

27 Ibid., 33.

Symptoms required for diagnosis of PTSD

DSM-5 criteria¹⁴

Intrusion symptoms

Recurrent, involuntary and intrusive distressing memories
Recurrent distressing dreams (content and/or affect related)
Dissociative reaction (acting or feeling as if event is recurring)
Intense or prolonged psychological distress to cues
Noticeable physiological reactions to cues

Avoidance

Avoidance or efforts to avoid distressing thoughts or feelings about or closely associated with the trauma
Avoidance or efforts to avoid external reminders (people, places, conversations, activities, objects, situations)

Negative alterations in cognitions and mood

Inability to remember an important aspect (typically due to dissociative amnesia)
Persistent and exaggerated negative beliefs or expectations about oneself, others, or the world (for example, "I am bad," "No one can be trusted," "The world is completely dangerous")
Persistent, distorted cognitions about the cause or consequences that lead to self blame or the blame of others
Persistent negative emotional state (for example, fear, horror, anger, guilt, shame)
Noticeably diminished interest or participation in important activities
Feelings of detachment or estrangement from others
Persistent inability to experience positive emotions (for example, happiness, satisfaction, love)

Alterations in arousal and reactivity

Irritable behaviour and angry outbursts (with little or no provocation)
Reckless or self destructive behaviour
Hypervigilance
Exaggerated startle response
Problems with concentration
Sleep disturbance

Additional criteria for complex PTSD

Not applicable

Bisson, Jonathan I et al. "Post-traumatic stress disorder." *BMJ (Clinical research ed.)* vol. 351 h6161. 26 Nov. 2015, doi:10.1136/bmj.h6161.

and grampa's TV room with my Aunt Mary Lou, the air conditioner blasting. She isn't really my aunt, she is my great-aunt, the twin sister of my grampa. She teaches me how to cross-stitch and then how to crochet. My nimble 5-year-old fingers quickly internalize the muscle memory and fall in love with the *movement* of making.

The evening before our flight is calm. Our suitcases, all 10 of them, are packed with comforts you can't buy in Malaysia like this ice-tea powder drink mix my mom liked, and peanut butter. My outfit for the plane is folded neatly on the floor next to my bed and my backpack is full of yarn and thread and embroidery hoops and fabric and needles.

As I hug and kiss my gramma and grampa goodbye, I hear the usual nightly news on in the background playing a segment on the rising cases of tuberculosis in the United States.

Proposed ICD-11 criteria¹⁷

Vivid intrusive memories, flashbacks, or nightmares, typically accompanied by strong and overwhelming emotions such as fear or horror, and strong physical sensations

Avoidance of thoughts and memories of the event or events
Avoidance of activities, situations, or people reminiscent of the event or events

Not applicable

Persistent perceptions of heightened current threat—for example, as indicated by hypervigilance or an enhanced startle reaction to stimuli such as unexpected noises

Severe and pervasive problems in affect regulation
Persistent beliefs about oneself as diminished, defeated, or worthless, accompanied by deep and pervasive feelings of shame, guilt, or failure related to the stressor
Persistent difficulties in sustaining relationships and in feeling close to others

Tuberculosis (TB) is a potentially serious infectious disease that mainly affects your lungs. The bacteria that cause tuberculosis are spread from one person to another through tiny droplets released into the air via coughs and sneezes.

Once rare in developed countries, tuberculosis infections began increasing in 1985, partly because of the emergence of HIV, the virus that causes AIDS. HIV weakens a person's immune system so it can't fight the TB germs. In the United States, because of stronger control programs, tuberculosis began to decrease again in 1993, but remains a concern.²⁸

28 "Tuberculosis - Symptoms and Causes." *Mayo Clinic*, <https://www.mayoclinic.org/diseases-conditions/tuberculosis/symptoms-causes/syc-20351250>. Accessed 1 Aug. 2020.

Walking in the middle of the street out of the cul de sac towards our house, I should be excited and anxious about our new family adventure—we are about to move to a new country even farther away and far more wild than Saudi Arabia—but all I can think about is the air on the airplane. My chest feels constricted, and my skin feels 5 times too big for my body and my face feels small. I can hear my mom talking as we walk but the words weren't making it to my consciousness. Why isn't anyone else worried about getting on an airplane with hundreds of people all breathing the same air for 13 hours? What if one of them has TB? What if we all catch it and die?

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When we get to KL, we move into the Holiday Inn while my parents are house hunting. On our first day there, my little brother trips running to the bathroom from the pool and hits his lip on the toilet seat. His tooth goes all the way through his lip. Dad has to take him to the hospital for stitches.

We move into a big house in the Ampang neighborhood of Kuala Lumpur. It is near the school where my parents will teach and where I will start 1st grade. Our neighborhood is right on the edge of the rapidly expanding city. Great swathes of the jungle near us are being cleared for housing developments, golf courses, and shopping centers. The wild animals, newly homeless, often find themselves lost amongst the houses and yards. Our neighbor's dachshund is killed by a spitting cobra, our housekeeper is chased into the house by apes as large as her.

One morning, early in our time there, we wake up to find that at least two people had pumped sleeping gas into our house, keeping us all fast asleep, while they robbed us. We found footprints going up the wall in our stairwell, as if the old creaky steps were too loud and they used a rope to climb up to the second floor where we all slept.

The next day my dad goes to the animal shelter and brings home our two dogs.

I remember the silhouette of my mother against her windows in her bedroom, pacing, on the phone with someone, probably her mom, or a sister, in tears: "I don't know what we're going to do here! And the food is so spicy! There's nothing for us to eat!"

I love how the skies turn color to look like a bruise. Blue and black, the light a sickly yellow. Almost like clockwork the rains come nearly every day during monsoon season.

A 500 year old tree falls just steps in front of our car on our drive home, forcing us into a 3 hour detour through flooded streets to get home. Another falls between our house and the neighbors, it

would have crushed my mom and brother had it fallen a little bit more to the right.

I sit on the wooden stairs near the front door overcome with anxiety. I know cancer will eat my body just like it did my grampa's. I will get AIDS. I will die. It's only a matter of time.

The limbic system is sometimes referred to as our “lizard brain.” It was the first part of the brain to develop, evolutionarily speaking, and it is similar to that of lizards and birds, hence its pet name. Its sole function, the only “choices it is able to make”, is to guide us in our survival.²⁹ It is the part of the brain through which our bodily sensations and emotions get filtered, and it gets first say about whether something is safe or not. Information gets passed along neural pathways, up through the hierarchy of brain infrastructure, and is acknowledged consciously through emotion and translated into thoughtful action only after passing through this “lizard brain,” the limbic system.

All our sensory input has to pass through the reptilian part of our brain before it even reaches the cortex, where we think and reason. Our lizard brain scans all of this input and responds, in a fraction of a second, by either letting something enter into the cortex or rejecting it and inciting a fight, flee, or freeze response. This mechanism allows our lizard brain to override our thinking brain whenever it senses real or imagined danger. It blocks any information from reaching our thinking brain until after it has sent a message to fight, flee, or freeze.³⁰

Our cortex doesn't get the opportunity to have a thought about any piece of sensory input unless our lizard brain lets it through. And in making its decision, our reptilian brain always asks the same question: is this dangerous or safe?³¹

Our vagus nerve, also known as the tenth cranial nerve or Darwin's “pneumogastric nerve,” connects our brain to the core of our body, winding down the spine from the brainstem, through our throat and down into our lungs, around and into our heart and stomach, before the majority of it weaves its way through our gut and intestines.

The largest part of your soul nerve goes through your gut, which has about 100 million neurons, more than your spinal cord. This is why we sense so many things in our belly—and why some biologists call the gut our ‘second brain.’ This second brain is where our body senses flow, coherence, and the rightness or wrongness of things.³²

It is a major channel for bodily sensorial information, and the main actor in the physiological orchestra that is Polyvagal Theory, a term coined by Stephen Porges in 1994 to describe the “biology of safety

29 Menakem, *My Grandmother's Hands: Racialized Trauma and the Pathway to Mending Our Hearts and Bodies*, 5.

30 Ibid., 6.

31 Ibid.

32 Ibid., 138.

and danger” in our body.³³ The vagus nerve passes information directly from our gut through the reactive lizard brain, then to the thinking brain, and then back down again to our body, creating an endless loop of mind/body coherence.

It is also responsible for communicating to “most of the muscles in [our] body when to constrict, when to release, when to move, and when to relax and settle.”³⁴ It regulates other automatic processes of the body such as breathing, heart rate, blood pressure, inflammatory responses and the perception of pain.³⁵

“Any threat to our safety or social connections triggers changes in the areas innervated by the ventral vagal complex”³⁶.

Importantly, proprioception (the body’s ability to construct an overall sense of the position and motion of your body, often called “the sixth sense” after sight, smell, touch, taste and hearing³⁷) and the bodily sensations that are passed to our brain through the vagus nerve are also the mechanisms through which we experience and process fear and other emotions. That is to say, we feel emotions in and with our body. The vagus nerve is what facilitates the translation for the brain.³⁸

We do know that the [vagus] nerve is where we experience a felt sense of love, compassion, fear, grief, dread, sadness, loneliness, hope, empathy, anxiety, caring, disgust, despair, and many other things that make us human. When your body has an emotional response, such as when your stomach clenches, your voice catches, your pulse races, your shoulders tighten, your breathing quickens, your body braces for impact, or you have a sense that danger is lurking, that’s your [vagus] nerve at work When you feel your heart opening or closing down; when you feel anxious in the pit of your stomach; when you sense that something wonderful or terrible is about to happen; when something feels right or wrong in your gut; when your heart sinks; when your spirit soars; or when your stomach turns in nausea—all of these involve your [vagus] nerve.³⁹

But how is trauma stored in the body? How do we remember with our body? How does memory become embodied? How does trauma manifest in physical disease and illness? How does our body actually store the memory of not only trauma, but of love, comfort and safety?

Normal memory integrates the elements of each experience into the continuous flow of self experience by a complex process of association; think of a dense but flexible network where each element exerts a subtle influence on many others.⁴⁰

33 Menakem, *My Grandmother’s Hands: Racialized Trauma and the Pathway to Mending Our Hearts and Bodies*, 138.

34 Ibid., 140.

35 Ibid., 139.

36 Van der Kolk. *The Body Keeps The Score: Mind, Brain and Body in the Transformation of Trauma*, 82.

37 Walker, Elise. “Proprioception: Your Sixth Sense, Why Movement and Sensation Are Inextricably Linked.” *Helix Magazine*, <https://helix.northwestern.edu/article/proprioception-your-sixth-sense>. Oct 3, 2020.

38 Menakem, *My Grandmother’s Hands: Racialized Trauma and the Pathway to Mending Our Hearts and Bodies*, 147.

39 Ibid., 139.

40 Van der Kolk. *The Body Keeps The Score: Mind, Brain and Body in the Transformation of Trauma*, 180.

One answer may lie in fascia, the omnipresent soft connective tissue forming a microscopic web throughout our entire body that serves as a source of nociceptive and proprioceptive information.⁴¹ Unlike spider webs, however, the structure of fascia has “no geometric regularity, no linearity, just fractal chaos.”⁴²

Previously, fascia was considered a throw-away by the medical community, it was just the extra fibrous material a surgeon had to cut through to get to the muscle and bone, and was skipped or overlooked almost completely during medical training. Awareness on the subject is now gaining traction as more and more studies show just how essential fascia is to our well being and to the functioning of our body on a fundamental level.

As the largest organ in our body, fascia binds us together, weaving through every organ, muscle, bone, tendon, ligament and nerve, including the vagus nerve, and is itself densely innervated by the autonomic sympathetic (nervous) system⁴³. It makes possible the spaces and cavities within our body. Although “highly deformable,”⁴⁴ it serves as the scaffolding for our human shape, a structural support system that allows the muscles to glide and move over and operate in concert with one another. Due to its tensile structural composition⁴⁵, if we are sensitive enough, we could feel the pull of our diaphragm as we breath in our toes.⁴⁶

Research is now pointing to how fascia “may function as a previously unrecognized whole body communication system”⁴⁷ due to the dynamic characteristics of its function, structure, and processes.

*Irritation of these primary afferent nociceptive fibres can initiate the release of neuropeptides, which in turn may alter the normal tissue texture of the surrounding connective tissue, through their interaction with fibroblasts, mast cells, and immune cells. This process may trigger a number of both local and global responses: connective tissue remodeling inflammation, nervous system sensitisation, pain — possibly evolving into persistent pain, eventually followed by an adaptive response of the whole organism. Thus, under certain dysfunctional conditions, a neuro-fascial interaction may be responsible for the setting of a local tissue “memory” (peripheral sensitisation), followed by a corresponding spinal facilitation. This may lead to a possible global effect through the involvement of higher centres and of autonomic and endocrine pathways. Changes not only of neural pain-signaling mechanisms might follow, involving the function of somatosensory and cognitive/affective areas of the brain.*⁴⁸

41 Bordini, Bruno, and Emiliano Zanier. “Understanding Fibroblasts in Order to Comprehend the Osteopathic Treatment of the Fascia.” *Evidence-Based Complementary and Alternative Medicine* 2015 (August 19, 2015). <https://doi.org/10.1155/2015/860934>, 5.

42 Guimberteau, Dr. Jean-Claude. Strolling under the Skin, 2005. <https://www.youtube.com/watch?v=eW0lvOVKDxE>.

43 Bordini, “Understanding Fibroblasts in Order to Comprehend the Osteopathic Treatment of the Fascia.”, 2.

44 Ibid

45 Tozzi, Paolo. “Fascia Science and Clinical Applications: Editorial | Does Fascia Hold Memories?” *Journal of Bodywork & Movement Therapies* 18, no. 2 (April 2014): 259–65. <https://doi.org/10.1016/j.jbmt.2013.11.010>, 262.

46 Heed, Ellen. Personal Interview. Zoom, August 15, 2020.

47 Langevin, Helene M. “Connective Tissue: A Body-Wide Signaling Network?” *Medical Hypotheses* 66, no. 6 (February 17, 2006): 1074–77. <https://doi.org/10.1016/j.mehy.2005.12.032>, 1.

48 Tozzi, “Fascia Science and Clinical Applications: Editorial | Does Fascia Hold Memories?”, 259.

Fibroblasts, the “foundation of the fascial system,”⁴⁹ generally serve as the control center for the dynamic and ever-changing state of the microscopic web. They regulate the pressure and flow of the fluids that permeate the fascia and make it supple, they stimulate inflammatory processes, facilitate the conveyance of small molecules and electrical activity through the microtubules.⁵⁰ These microtubules connect each fibroblast to the web of fibers around it, and thereby essentially to every other fiber in the body. The chemicals and electric signals that are passed through these microtubules by the fibroblasts serve as messages that allow the “communication... with distant cells”.⁵¹

*Depending on the precise external or internal stimulus a particular ‘information substance’ will flow through the body and bind to specific receptor sites. When this binding occurs, particular feelings are perceived encoded with a given memory. Such chemical messages act reciprocally on the brain and the rest of the body, thanks to the denser presence of their receptors in the limbic (emotional) portion of the brain. The body might therefore be conceived as a single organ with full sensing capabilities, where any tissue may store emotional memories based on the specific receptors they possess, and the nature of the chemical messages they receive.*⁵²

Fibroblasts not only convey tension throughout the body, but can also “dynamically affect mechanical tension [by] rapidly remodeling their cytoskeletons” in just “a few moments” via a “physiological change in length” of the microtubules that extend from it.⁵³ In this way, fascia may store information *structurally*.

*The fascial system can be plausibly considered a memory organ, because it not only registers the functions of the structures it surrounds and connects, but also memorizes any function or information arriving and departing from the same structures.*⁵⁴

*These connections do not appear to be permanent but transient.*⁵⁵

The microtubules that form the basis of the fascial web are composed largely of crystalline collagen strands, which studies have shown to have the capacity to both transmit and generate electrical signals.⁵⁶ Research also suggests that a correspondence may exist between the fascial lines of the body and the network of meridians outlined by Traditional Chinese Medicine⁵⁷ that facilitate the circulation of qi, or life force, throughout the body.

49 Bordoni, “Understanding Fibroblasts in Order to Comprehend the Osteopathic Treatment of the Fascia.” 2.

50 Ibid., 3.

51 Tozzi, “Fascia Science and Clinical Applications: Editorial | Does Fascia Hold Memories?”, 262.

52 Ibid.

53 Bordoni, “Understanding Fibroblasts in Order to Comprehend the Osteopathic Treatment of the Fascia.” 2.

54 Ibid., 4.

55 Ibid., 3.

56 Tozzi, “Fascia Science and Clinical Applications: Editorial | Does Fascia Hold Memories?”, 262.

57 Ho, Mae-Wan. “Super-Conducting Liquid Crystalline Water Aligned with Collagen Fibres in the Fascia as Acupuncture Meridians of Traditional Chinese Medicine.” *Forum on Immunopathological Diseases and Therapeutics* 3, no. 3–4 (2012): 221–36, 224.

The collagen strands have “semiconductive, piezoelectric, and photoconductive properties, in vitro⁵⁸ and can “act like computers, storing memories in the form of ‘information strings’” by shifting into “different orientations” and “changing their position of attachment.”⁵⁹ The fibers arrange themselves in “highly ordered, crystalline arrays and this semiconducting system produces coherent oscillations that move rapidly throughout the living matrix.”⁶⁰

Memories in the body may be also encoded into the structure of fascia itself... Furthermore, the release of substance P from nerve endings, particularly driven by the hypothalamus following emotional trauma, may alter the collagen structure into a specific hexagonal shape, referred as “emotional scar” [sic]. The entirety of this phenomenon may be interpreted as a highly structurally and functionally specific process of encoding memory traces in fascia. In addition, this ability seems to be present not only in the collagen network but also in elastin fibres and in various cells throughout the connective tissue... Since these are relatively durable and long-lasting cells, they may represent a kind of “long term memory.”⁶¹

A consequence of such communication is that every process occurring anywhere in the organism produces a characteristic pattern of vibrations that travel widely, distributing regulatory information... throughout the system... instantly. Some theories hypothesize that the totality of such vibratory messages throughout the matrix may constitutes [sic] a “body consciousness” functionally interconnected with the “brain consciousness” of the nervous system... Memories related to diseases, dysfunctions, pain, infection, injuries, surgeries, physical and emotional trauma may be stores within this system, influencing the normal informational pattern either locally or globally, altering the properties of the fabric, distorting resulting vibrations. In this way, consciousness may be influenced by memories stored in soft tissues.⁶²

Meanwhile, “manual therapy” like massage and other fascial release methods, “may then activate an ‘erasing process’ via a... transformation of the matrix causing a reset of dysfunctional memories, possibly stored in the fascia.”⁶³ In her extensive practice as a somatic therapist, Dr. Ellen Heed found, and as later noted in her thesis titled *Women’s Sexual Pain After Childbirth: Development of a Somatic Model for Scar-tissue Remediation, Education and Management*, that scar tissue can spontaneously dissolve upon the resolution of a traumatic memory.⁶⁴

58 Bordini, “Understanding Fibroblasts in Order to Comprehend the Osteopathic Treatment of the Fascia.” 4.

59 Tozzi, “Fascia Science and Clinical Applications: Editorial | Does Fascia Hold Memories?”, 261.

60 Ibid., 262.

61 Ibid., 260.

62 Ibid., 263.

63 Ibid., 261.

64 Heed, Ellen. Personal Interview. Zoom, August 15, 2020.

THE BODY IN TIME

When we are in a restful state, we breathe, we sleep, our heart beats. Ideally, our wake and sleep cycles, and a myriad of other bodily processes are set to a 24-hour circadian clock set by our continuous (and evolutionary) experience of daylight and darkness. Our bodies also have other rhythmic cycles that other bodily oscillations set themselves to.

*Diurnal rhythms are ubiquitous in the natural world. They are essential to life... Living organisms are full of clocks of various kinds — molecular, neuronal, chemical, hormonal — each of them more or less in tune with the others. There are chemical mechanisms that keep to a twenty-four-hour rhythm even in the biochemistry of single cells.*⁶⁵

But what is time for a human being?

Aristotle is the first person we know of to have recorded his musings on the nature of time. His conclusion being that time is actually our measurement or our counting of change. “Time is our way of situating ourselves in relation to the changing of things: the placing of ourselves in relation to the counting of days.”⁶⁶

Time is not the ticking of the clock or the earth revolving around the sun. It is not actually as linear as we may feel it to be because there is no universal time. “Now” here on Earth is not the same as “now” on Mars, clocks move faster on mountains than at sea level, “the ‘present of the universe’ is meaningless.”⁶⁷

From a theoretical physics perspective, “time” is an artifact of heat, in that the link between the two sensations is “fundamental.”

*In the elementary equations of the world, the arrow of time appears only where there is heat. The link between time and heat is therefore fundamental: every time a difference is manifested between the past and the future, heat is involved... Only where there is heat is there a distinction between past and future. Thoughts, for instance, unfold from the past to the future, not vice versa — and, in fact, thinking produces heat in our heads...*⁶⁸

Just as time is inextricably related to heat, so too is entropy, which is defined first as “the measure of a system’s *thermal* energy per unit temperature that is unavailable for doing useful work,”⁶⁹ (italics mine). Many of us, however, understand the term to describe something far less abstract—the concept of chaos.

65 Rovelli, Carlo. *The Order of Time*. Great Britain: Allen Lane, 2018, 56.

66 Rovelli, *The Order of Time*, 57.

67 Ibid., 37-41.

68 Ibid., 23.

69 Encyclopedia Britannica. “Entropy | Definition and Equation.” Accessed November 3, 2020. <https://www.britannica.com/science/entropy-physics>.

*Because work is obtained from ordered molecular motion, the amount of entropy is also a measure of the molecular disorder, or randomness, of a system. The concept of entropy provides deep insight into the direction of spontaneous change for many everyday phenomena.*⁷⁰

The term was initially coined by the German physicist and mathematician Rudolf Clausius who also authored the equation for it, which describes the “irreversible progress of heat in only one direction”.⁷¹ Then it was Ludwig Boltzmann, the Austrian physicist, who showed us that entropy “is nothing other than the ubiquitous and familiar natural increase of disorder.”⁷²

*Boltzmann will end his life by hanging himself... while his wife and daughter are swimming in the Adriatic.*⁷³

The friction caused by our bodies moving through space creates the human perception of the flowing of time. It marks our descent into unavoidable entropy: our world becomes more and more chaotic and disordered as we grow older. The molecules, veins, and hair of our body compost back into the soil after we die.

As we age and change, as our body moves through space and different environments, we learn that the world is bigger and more complicated and chaotic than we ever could have imagined.

*“Entropy is the general trend of the universe toward death and disorder.” James R. Newman*⁷⁴

But as Rovelli explains, and as Boltzmann “discovered”, our world only seems to be sliding into entropy because the world as we know and experience it, is *blurred*.

*The notion of ‘particularity’ is born only at the moment we begin to see the universe in a blurred and approximate way... If I could take into account all the details of the exact, microscopic state of the world, would the characteristic aspects of the flowing of time disappear? Yes. If I observe the microscopic state of things then the difference between past and future vanishes.*⁷⁵

In other words, the world seems particular and time-based to us. We are able to pick out specific moments in time because our brains are actually translating the enormity of our lived experience into a blurred facsimile. At the same time, we remember only bits and pieces of our days, and these bits and pieces

70 Encyclopedia Britannica. “Entropy | Definition and Equation.” Accessed November 3, 2020. <https://www.britannica.com/science/entropy-physics>.

71 Rovelli, *The Order of Time*, 24.

72 Ibid., 28.

73 Ibid., 33.

74 *Definition of ENTROPY*. <https://www.merriam-webster.com/dictionary/entropy>. Accessed 9 Aug. 2020.

75 Rovelli, *The Order of Time*, 30.

become fewer and more far between the farther we search back in our memory banks for moments from years gone by. This is the way that memory works — we couldn't possibly remember or be conscious of every single sight, sound, or ping from our surroundings as we move through our lives because our brains are not capable of processing such a large amount of information. As a result, we simply filter out and remember only the parts that are meaningful to us in some way.

*"Only a certain quantity of experiences can be kept present at any one time; very important experiences remain, but with time most disappear, as they can no longer be retained in the working memory."*⁷⁶

"Time," therefore, is our personal narrative of our body in space. It is the strung together narrative of memories of our body moving and breathing and feeling emotions and physical sensations in places and spaces in relation to other bodies and places and spaces and events.⁷⁷

*There is no sense organ for time. Subjective time as a sense of self is a physically and emotionally felt wholeness of our entire self through time.*⁷⁸

*The mental representation of time is also linked to the spatial one. For example, we associate earlier times with the left-hand side of a sheet of paper (according to Rene Descartes's coordinate system where the x-axis can represent the arrow of time) and later times with the right-hand side; for us, time proceeds from left to right—that is, in space.*⁷⁹

*Time seems "long" to me; I use spatial metaphors to describe the experience of time... Moreover, in most cultures the past is associated with what is located behind us, while the future is what is located ahead of us. In this notion, the individual's own body creates the relationship to the present. Memory and anticipation are spatially oriented according to my physical position; I have left the past behind me, and the future lies before me. Typically, we represent time using a mental line on which "before" and "after" are positioned on the left and right relative to one another. In this way time is illustrated through space.*⁸⁰

We, our bodies, the container from which our consciousness springs, are time.

*Without a concept of self, time does not exist.*⁸¹

76 Wittmann, *Altered States of Consciousness: Experiences out of Time and Self*. Cambridge, 48.

77 Ibid., 2.

78 Ibid., 85.

79 Ibid., 17.

80 Ibid.

81 Ibid., 27.

*If I pay attention to the time of the present moment, I feel the passage of time particularly intensively across my body, which is me. I am time.*⁸²

We have evolved to understand time the way we do because “I”, our consciousness, is intimately and inextricably connected to our body, and our brain continuously constructs representations of our body in changing space. Therefore, we have a sense of time passing.⁸³

*[Our] sense of time passing arises from the continuous construction of representations of the body in the brain. The autonomic neural pathways that connect body and brain run from the lateral gray column of the spinal cord to the brain stem and then via specific thalamic nuclei to the posterior insular cortex, which is part of the cerebral cortex. Through a gradual processing and integration of these body signals with other sense impressions and thought processes and with motivational and situational conditions, an all encompassing representation of the present condition is created in the anterior insular cortex. This is what Bud Craig calls a “global emotional moment,” and it represents the self, updated from moment to moment, as “how I feel now.” Consequently the concept of self is based on physical conditions that alter with time; in this way the sense of time arises as a perception of self through time.*⁸⁴

We understand time because of our memory. We understand that something happened, and that it is in the past because we can remember it. We cannot remember the future. But we can project ourselves through our imagination into the future, and we can bring our past into our present (and indeed perpetuate it into our future) because our physiology can conjure the past through memory.

*An “essential” “ingredient in the foundation of our identity... is memory. We are not a collection of independent processes in successive moments. Every moment of our existence is linked by a peculiar triple thread to our past — the most recent and the most distant — by memory. Our present swarms with traces of our past. We are histories of ourselves. Narratives.*⁸⁵

The longer we are alive, the greater the complexity and chaos of our lives, of our bodies and our memories become. So too grow the number of scenarios that a traumatized person may experience or learn about which fit their fears and trigger their traumatic response. The longer we live, by the laws of the universe, the more chaotic we—our lives, our bodies, our perception of reality, our past and our understanding of what our future may hold—become.

82 Wittmann, *Altered States of Consciousness: Experiences out of Time and Self*. Cambridge, 3.

83 Ibid., 83.

84 Ibid.

85 Rovelli, *The Order of Time*, 154.

TRAUMATIC MEMORY

"Who can find a proper grave for such damaged mosaics of the mind, where they rest in pieces? Life goes on but in two temporal directions at once, the future unable to escape the grip of memory laden with grief." Holocaust Survivor ⁸⁶

It is well-known that memory is unreliable⁸⁷ and that the memories that make up our own autobiographical record don't reflect reality so much as fit to our version of how we would like to remember it.⁸⁸ Typically, whether we remember an event within the totality of our lived experiences, and how accurately we are able to recall it, greatly depends on how emotionally aroused we were at the time, and how personally meaningful we felt it to be.⁸⁹ When it comes to traumatic memory, however, the picture becomes more complex.

... years of apparent forgetting, followed by fragmented, disturbing images, dramatic physical symptoms, and sudden reenactments.⁹⁰

I am born in Riyadh, Saudi Arabia, on April 30, 1984. I am born with jaundice, but there is only one UV lamp in the tiny clinic by the airport. They give it to the rich Saudi baby, and put me in the window under the bright desert sun.

When a body experiences a traumatic event, it will usually remember that event in vivid detail for a long time. In fact, the more adrenaline secreted at the time of an event, the more precise the memory of that event will be.⁹¹ This aligns well with the idea that trauma serves as a survival mechanism: if something is threatening to our existence, we will want to remember it well so as to be able to spot it and avoid it in the future.

Immediately after a memory is laid down, it undergoes a lengthy process of integration and reinterpretation—a process that automatically happens in the mind/brain without any input from the conscious self. When the process is complete, the experience is integrated with other life events and stops having a life of its own... In PTSD this process fails and the memory remains stuck—undigested and raw.⁹²

86 Van der Kolk. *The Body Keeps The Score: Mind, Brain and Body in the Transformation of Trauma*, 195.

87 Lacy, J., Stark, C. The neuroscience of memory: implications for the courtroom. *Nat Rev Neurosci* 14, 649–658 (2013). <https://doi.org/10.1038/nrn3563>.

88 Van der Kolk. *The Body Keeps The Score: Mind, Brain and Body in the Transformation of Trauma*, 175.

89 Ibid.

90 Ibid., 174.

91 Ibid., 176.

92 Ibid., 256.

However, traumatic experiences can also be imprinted in the body in shuffled fragments of feelings: “sensory and emotional traces, images, sounds and physical sensations”^{93, 94} in “highly summarized form”⁹⁵ that are imprinted out of order.⁹⁶ The sensations a person experiences during the actual traumatic event, like pain, fear, and confusion, become jumbled and confused and are not necessarily the same ones that are imprinted in the body or recalled later by one’s memory when triggered.⁹⁷

*Trauma is much more than a story about something that happened long ago. The emotions and physical sensations that were imprinted during the trauma are experienced not as memories but as disruptive physical reactions in the present.*⁹⁸

When a traumatic event, or series of events, is so overwhelmingly horrible (as is often the case with chronic childhood sexual abuse and/or trauma), the body’s “system becomes overwhelmed and breaks down.”⁹⁹ The psyche cannot handle it, and in a desperate act of protection, the memory is repressed, buried so deep in the subconscious that it never has to be revisited.

*I have a good memory. I can remember conversations with friends almost word for word, even years after they occur. I remember how platinum blond the hair of my fourth grade teacher was or how I got in trouble for reading in class in the third grade because I was bored... I remember good things. I remember bad things. When I have to, though, I can strip my memory bare, and I have done this, at times, when erasure was necessary.*¹⁰⁰

There is therefore a difference between the “narrative memory” of the event, which, as discussed can be quite accurate and vivid, and the embedded somatic experience of the traumatic memory itself.¹⁰¹ The problem is, even if one is unconscious of the experience due to having repressed the narrative memory of the event, the body remembers it, and can therefore be triggered into a fight, flight, or freeze response, or coping mechanisms and protective behavior.

*At this point the emotional brain, which is not under conscious control and cannot communicate in words, takes over. The emotional brain (the limbic area and the brain stem) expresses its altered activation through changes in emotional arousal, body physiology, and muscular action. As a result, the imprints of traumatic experiences are organized not as coherent local narratives but in fragmented sensory and emotional traces: images, sounds, and physical sensations.*¹⁰²

93 Van der Kolk. *The Body Keeps The Score: Mind, Brain and Body in the Transformation of Trauma*, 176.

94 Ibid., 259.

95 Ibid., 181.

96 Ibid., 194.

97 Ibid.

98 Ibid., 204.

99 Ibid., 176.

100 Gay, Roxanne. *Hunger: A Memoir of (My) Body*. New York, NY: HarperCollins, 2017, 28

101 Van der Kolk. *The Body Keeps The Score: Mind, Brain and Body in the Transformation of Trauma*, 179.

102 Ibid., 176.

Furthermore, trauma, whether remembered or not, can cause a person to be easily triggered by what others might perceive as benign events, and then react “in ways that seem wildly inappropriate, overly charged, or otherwise out of proportion.”¹⁰³ Their behavior can seem chaotic, irrational, and out of their control.¹⁰⁴ They are unable to respond “appropriately” in triggering situations because their body-brain loop is ringing all the alarms that they are not safe, and that, as a result, they need to respond with enough force that they will not be annihilated by the danger.

Studies show that “reliving a strong negative emotion causes significant changes” in “areas that are crucial for regulating basic bodily functions,” and that “recalling an emotional event from the past causes us to actually re-experience the visceral sensations felt during the original event.”¹⁰⁵ When present events trigger a flashback, it happens with the “reflexive energy that’s still stuck inside the nervous system.”¹⁰⁶

*If elements of the trauma are replayed again and again, the accompanying stress hormones engrave those memories ever more deeply in the mind.*¹⁰⁷

During a flashback key areas of the brain (the hippocampus and thalamus) shut down: one that “provides our sense of time and perspective, which makes it possible to know ‘that was then, but I am safe now,’ and another area that integrates the (experience) into a coherent story.”¹⁰⁸ With the loss of these specific brain functions, a person is overwhelmed by the images, sounds, smells, and sensations that were imprinted during the traumatic event. These sensations overtake their present lived reality; their bodies secrete the stress hormones to send them into a protective fight, flight, or freeze stance, and they are thrown into a chaotic and incoherent tangle of physiological responses, somatic sensations, and intense emotions that makes it feel as if they are literally reliving the traumatic event.¹⁰⁹

*It is as if time is folded or warped, so that the past and present merge, as if I were physically transported into the past. Symbols related to the original trauma, however benign in reality, are thoroughly contaminated and so become objects to be hated, feared, destroyed if possible, avoided if not.*¹¹⁰

The constant threat of a flashback triggered by benign everyday occurrences is one reason why it is common for traumatized people to dissociate from their bodies or go numb to even the pleasant things in life. It is exhausting to constantly be on the lookout not only for the thing which traumatized you in the past, but also for the thing that might trigger a flashback.

103 Menakem, *My Grandmother's Hands: Racialized Trauma and the Pathway to Mending Our Hearts and Bodies*, 8.

104 Van der Kolk. *The Body Keeps The Score: Mind, Brain and Body in the Transformation of Trauma*, 67.

105 Ibid., 95.

106 Menakem, *My Grandmother's Hands: Racialized Trauma and the Pathway to Mending Our Hearts and Bodies*, 8.

107 Van der Kolk. *The Body Keeps The Score: Mind, Brain and Body in the Transformation of Trauma*, 67.

108 Ibid., 219.

109 Ibid., 66.

110 Ibid., 198.

*When we're triggered into states of hyper- or hypoarousal, we... become reactive and disorganized; our filters stop working—sounds and lights bother us, unwanted images from the past intrude on our minds, and we panic or fly into rages. If we're shut down, we feel numb in body and mind; our thinking becomes sluggish and we have trouble getting out of our chairs. As long as people are either hyperaroused or shut down, they cannot learn from experience.*¹¹¹

Traumatized people feel “chronically... unsafe in their own skin”¹¹² due to constant “visceral warning signs”¹¹³ stemming from the unprocessed trauma and looping physiological stress response it causes. In an effort to lessen and control these sensations, they can go into a protective dissociation. Parts of the brain will literally deaden the body’s capacity to feel alive.¹¹⁴ They go numb, shutting down proprioception so as not to feel the fear and anxiety that is constantly being triggered.

*Years ago, I told myself that one day I would stop feeling this quiet but abiding rage about the things I have been through at the hands of others. I would wake up and there would be no more flashbacks. I wouldn't wake up and think about my histories of violence. I wouldn't smell the yeasty aroma of beer and for a second, for several minutes, for hours, forget where I was. And on and on and on. That day never came, or it hasn't come, and I am no longer waiting for it.*¹¹⁵

Traumatized people are dissociated, not “in” their bodies. By dissociating, by getting out of our bodies, we don’t have to remember.

*Trauma is expressed not only as fight or flight but also as shutting down and failing to engage in the present.*¹¹⁶

I want to add a story here about a memory of being dissociated, but I can't remember one. Dissociation is not felt, it is the opposite of feeling. I remember very little. I felt very little.

//

I am walking down the street in the East Village of NYC, sometime around the end of 2013. I look down at my hands and stop dead in my tracks. I am *in* my body. I have an overwhelming sensation that I am inhabiting this skin for the very first time.

111 Van der Kolk. *The Body Keeps The Score: Mind, Brain and Body in the Transformation of Trauma*, 205.

112 Ibid., 96.

113 Ibid., 97.

114 Ibid., 92.

115 Gay, *Hunger: A Memoir of (My) Body*, 283.

116 Van der Kolk. *The Body Keeps The Score: Mind, Brain and Body in the Transformation of Trauma*, 82.

EPIGENETICS

The memory of lived trauma and traumatic somatic memories are not the only way in which trauma warps, folds and weaves together the strands of time. Trauma can be stretched over vast periods of time by being passed down through learned behaviors as well as genetics.

In many cases, [the body] develops strategies around the “stuckness” [of the trauma], including extreme reactions, compulsions, strange likes and dislikes, seemingly irrational fears, and unusual avoidance strategies. Over time, these can become embedded in the body as standard ways of surviving and protecting itself. When these strategies are repeated and passed on over generations, they can become the standard responses in families, communities, and cultures.¹¹⁷

When someone exhibits reflexive traumatic responses over a long period of time, those behaviors can seem to others to be idiosyncratic, negative elements of that person’s personality. The responses become second nature for the person, and when they happen for long enough, the responses also “lose context” and become completely disconnected from their initial purpose of self-preservation. In what is referred to as “traumatic retention,” these behaviors become internalized, and can be “passed down over generations within a particular group, [and] can start to look like culture.”¹¹⁸ Trauma is thereby perpetuated, not only by the initially traumatized person teaching their offspring behaviorally as they grow up, but also by hurting others, perpetuating the very trauma that the behavior is meant to protect against.

Notably, studies have shown that trauma can affect not only the expression of a person’s genes during their own lifetime, but that the effects of trauma can also be inherited on a fundamental, genetic level by subsequent generations. In other words, trauma is epigenetic.

Genes are not fixed; life events can trigger biochemical messages that turn them on or off by attaching methyl groups, a cluster of carbon and hydrogen atoms, to the outside of the gene (a process called methylation), making it more or less sensitive to messages from the body. While life events can change the behavior of the gene, they do not alter its fundamental structure. Methylation patterns, however, can be passed on to offspring.¹¹⁹

Furthermore, studies have found evidence that traumatic memories can also be passed onto the bodies of multiple generations. The idea that memory—something we perceive as so quintessentially idiosyncratic, something so ephemeral and ungraspable—can be passed down, feels nothing short of supernatural.

A landmark study demonstrating this effect in mice was published in 2014 by Kerry Ressler and Brian Dias (“Parental Olfactory Experience Influences Behavior and Neural Structure

117 Menakem, *My Grandmother’s Hands: Racialized Trauma and the Pathway to Mending Our Hearts and Bodies*, 8.

118 Ibid., 9.

119 Van der Kolk. *The Body Keeps The Score: Mind, Brain and Body in the Transformation of Trauma*, 152.

in Subsequent Generations," Nature Neuroscience 17: 86-96). Ressler and Dias put male mice in a small chamber, then occasionally exposed them to the scent of acetophenone (which smells like cherries)—and, simultaneously, to small electric shocks. Eventually the mice associated the scent with pain; they would shudder whenever they were exposed to the smell, even after the shocks were discontinued. The children of those mice were born with a fear of the smell of acetophenone. So were their grandchildren. As of this writing, no one has completed a similar study on humans, both for ethical reasons and because we take a lot longer than mice to produce a new generation.¹²⁰

I am of my mother's body, she is of her mother's body, therefore I am of my grandmother's body. Of course her memories are also mine. They are just obscured by time.

Embodied trauma throws not only our mind and body into chaos, but can trigger chaos in communities and generations of families.

My grandma Dolores is born on April 30, 1923. When Dolores is still a fetus, my mother is already inside of her as an egg.

My great-grandmother, my Buscia, is a sweet centenarian. In her old age, blinded by macular degeneration, she tells me sharply-detailed stories about life in Chicago in the early 20th century, like memories from when she was two years old about the slick rain jacket of the sailor with the bright blue eyes who helped her off the ship that had carried her family to America. The sailors carried her, as her mother, my Great-great-grandmother, was carefully clutching a baby that would soon die from smoke-inhalation.

Though sweet with me, she had been harsh on her children. My grandma and her sisters remember her as strict and mean. Once, when my great-grandfather called her "honey," she responded with, "Hank! Don't call me bee shit!"

My grandma's name was Dolores, which means sadness in Spanish. She was Buscia's eldest daughter, and had 8 living children of her own. My mom was the second eldest, and one little girl named Babette was a late-term still born.

Dolores was overweight, her legs covered in varicose veins. She worked all day at the family's tavern, *Jeanette's*, in Burnham on the South Side of Chicago, cooking and cleaning and dealing with the factory workers that would come in to cash their checks and get a bite after their shifts. When she wasn't working, she couldn't take a break, couldn't nap on the couch of their tiny home without my grampa yelling at her about a dirty house.

My grampa was a WWII veteran and a life-long smoker. I remember his rough, gravelly, deep voice—a product of his life-long smoking habit and eventual throat cancer. He was notoriously unfaithful to my gramma, who once made my uncle Mike drive her by the house where he was with another woman.

Everyone said Dolores was a hypochondriac. If someone mentioned that they had an ailment, a hyperactive thyroid or a tumor, she would respond that she also had it, or had had it, and that it had been much worse. She complained constantly of “shooting pains in her legs” and headaches.

When my grampa was dying of cancer she would steal his pain pills. “No bubs, you can’t have another pill, it’s not time yet,” and then she’d swallow it. No one took her seriously.

Definition of hypochondria: extreme depression of mind or spirits often centered on imaginary physical ailments.¹²¹

When she was pregnant with my mother, she was also carrying me, an egg inside the fetus that became my mother. *What was my grandmother’s life like when she was pregnant with my mother? How was the birth?*

What we know so far:

- *A fetus growing inside the womb of a traumatized mother may inherit some of that trauma in its DNA expression. This results in the repeated release of stress hormones, which may affect the nervous system of the developing fetus.*
- *a man with unhealed trauma in his body may produce sperm with altered DNA expression. These in turn may inhibit the healthy functioning of cells in his children.*
- *Trauma can alter the DNA expression of a child or grandchild’s brain, causing a wide range of health and mental health issues, including memory loss, chronic anxiety, muscle weakness, and depression.¹²²*

The lines drawn in the sand between nature and nurture blur even further when we consider the above. How much of our lived experience is ours alone, and how much is shaped by inherited biases and memories? How much of our embodied experience comes from the bodies of others? How much do we hold in our bodies for the bodies of the future, and how much can we let go of for their sake?

121 *Definition of HYPOCHONDRIA.* <https://www.merriam-webster.com/dictionary/hypochondria>. Accessed 1 Aug. 2020.

122 Menakem, *My Grandmother’s Hands: Racialized Trauma and the Pathway to Mending Our Hearts and Bodies*, 40.

ORDER IN CHAOS / MINDFULNESS & MOVEMENT AS THERAPY

"Without a clear and present focus on the body, trauma cannot be fully addressed."¹²³

One of the most difficult problems of trauma and traumatic memories is the chaotic and disordered nature in which it affects one's life, and the chaos it brings.

The Greek usage of chaos described the original state of the world before it was ordered. "The formless void" was the state from which the process of creation was undertaken... Order derives from the Latin word ordo, a terminus technicus originating from the art of weaving, or the thread-to-loom ordering process.¹²⁴

We experience this chaos consciously, because trauma becomes the lens through which we experience the events of our lived reality. Therefore, it makes sense to focus on the place from which many believe the totality of our consciousness stems (our brain and mind) in order to relieve one's conscious experience of chaos.

Sometimes, however, traumatized people can self-soothe with harmful things. Obsessive eating, skin picking, and smoking can feel like ways to shield our bodies from the outside world, or control pain or bodily harm by inflicting it on ourselves.

You are likely to experiment with anything—drugs, alcohol, binge eating, or cutting—that offers some kind of relief.¹²⁵

The repetitive nature of these coping mechanisms provides a sense of order for a traumatized person. Coping mechanisms like these can ground a person's day, serving as a safe haven where they can forget about the world and focus on the sweet release of tension and happiness that comes from, sometimes literally, scratching an itch.

For some victims who inflict pain on themselves (most prevalently those who suffer chronic trauma as children), their self-injury is calming, producing no pain, but rather an escape, a dissociation. While, for other victims, their physical pain is preferred to the "emotional pain that it replaces."¹²⁶

I was swallowing my secrets and making my body expand and explode. I found ways to hide in plain sight, to keep feeding a hunger that could never be satisfied—the hunger to stop

123 Menakem, *My Grandmother's Hands: Racialized Trauma and the Pathway to Mending Our Hearts and Bodies*, 58.

124 Curtis, Amy Stacey. *Women, Trauma & Visual Expression*. Amy Stacey Curtis, 2005, 192.

125 Van der Kolk. *The Body Keeps The Score: Mind, Brain and Body in the Transformation of Trauma*, 88.

126 Curtis, *Women, Trauma & Visual Expression*, 204.

*hurting. I made myself bigger. I made myself safer. I created a distinct boundary between myself and anyone who dared to approach me. I created a boundary between myself and my family. I became of them but not.*¹²⁷

In Malaysia, my arms and legs are always covered in mosquito bites. A fresh bite will swell up into a giant welt, the only remedy for which is to scratch until it bleeds. This relieves the pressure. Then I pick at the dried scabs, holding pieces of tissue paper to the drops of blood, wait till they dry, and then peel the scabs off again and again. I have scars up and down my arms for the rest of my life—one large one in particular just below the wrist bone on my right arm is about 2 cm long.

I bite my fingernails and cuticles till they bleed.

We move to Rabat, Morocco when I am 12. I am bullied relentlessly my first few years there. I finally make friends and develop a prolific habit of lying to my parents and abusing substances. I will engage in behavior, over and over again, that is dangerous.

I spend the next 15 years of my life worried that something will happen to my family when I'm not there.

My substance abuse and obsessive self-mutilating picking habit rages through my 20s and into my 30s.

In early 2009, I am living in Brooklyn, NY. I learn that Adam, one of my best friends in Morocco and my first real, yet unconsummated crush, was killed. He was out with friends at a club in Miami when a man who was denied entrance at the door slipped in through a back entrance, pulled out his gun, and indiscriminately opened fire.

Later that year, I read an article about swine flu and have a multi-day panic attack on the floor of my room.

Many go to psychotherapy to help them overcome symptoms of PTSD, where psychologists lead patients through processes aimed at triggering “insight and understanding” of the trauma in the patient in order to help them “manage their behavior”.¹²⁸ They take mood-altering medication, and focus on brain and mind-based therapies, and strategies for coping with trauma.

*However, neuroscience research shows that very few psychological problems are the result of defects in understanding; most originate in pressures from deeper regions in the brain that drive our perception and attention. When the alarm bell of the emotional brain keeps signaling that you are in danger, no amount of insight will silence it.*¹²⁹

127 Gay, *Hunger: A Memoir of (My) Body*, 61.

128 Van der Kolk. *The Body Keeps The Score: Mind, Brain and Body in the Transformation of Trauma*, 64.

129 Ibid.

Although language is essential in the process of naming and acknowledging one's trauma¹³⁰ so as to be able to seek help for it and begin to heal, in essence, we cannot use only words to heal ourselves. We cannot think or logic or language our way out of trauma because trauma is *of the body*.

*I might ask a patient if her hands feel okay, and if she says yes, I'll ask her to move them, exploring their lightness and warmth and flexibility. Later, if I see her chest tighten and her breath almost disappear, I can stop her and ask her to focus on her hands and move them, so that she can feel herself as separate from the trauma. Or I might ask her to focus on her out breath and notice how she can change it, or ask her to lift her arms up and down with each breath—a qigong movement.*¹³¹

Furthermore, with the jumbled nature of traumatic memory, and because “these experiences are initially organized on a nonverbal level,”¹³² the recounting and retelling of the trauma for the therapeutic or clinical purposes can, over time, be and become increasingly inaccurate. By telling and retelling the story of a trauma that is, at best, laid down in fragmentary, disordered pieces, the historically accurate timeline of events becomes farther and farther from reach.¹³³

*We can get past the slipperiness of words by engaging the self-observing, body-based self system, which speaks through sensations, tone of voice, and body tensions. Being able to perceive visceral sensations is the very foundation of emotional awareness. If a patient tells me that he was eight when his father deserted the family, I am likely to stop and ask him to check in with himself: What happens inside when he tells me about that boy who never saw his father again? Where is it registered in his body? When you activate your gut feelings and listen to your heartbreak—when you follow the interoceptive pathways to your innermost recesses—things begin to change.*¹³⁴

If our body and our nervous system feel safe and relaxed, then we can think and respond to the stimuli and events around us, rather than feel at the mercy of chaotic triggers, flashbacks, and the repercussions of an overly-sensitive and mis-calibrated self-preservation response. In order to do so, we have to override the mechanisms that keep us stuck in those loops by activating the part of our brain that notices ourselves, as this helps establish a sense of control and agency in our bodily experience.

*Agency starts with what scientists call interoception, our awareness of our subtle sensory, body-based feelings: the greater that awareness, the greater our potential to control our lives.*¹³⁵

130 Van der Kolk. *The Body Keeps The Score: Mind, Brain and Body in the Transformation of Trauma*, 247.

131 Ibid., 245.

132 Van der Kolk, McFarlane, and Weisaith, *Traumatic Stress*, 287.

133 Van der Kolk. *The Body Keeps The Score: Mind, Brain and Body in the Transformation of Trauma*, 175-176.

134 Ibid., 238.

135 Ibid., 206.

The emotional brain (limbic system) is directly triggered by the body, therefore we must focus on therapies and practices that help us to feel embodied rather than dissociated. When we are safe in our bodies, our nervous system can come to rest in a state that is not triggering a constant fight, flight, or freeze response; we feel safe enough to feel ourselves feeling, self aware and in-tune in *the present moment*. We are not in the past, in the moment or moments where we were scarred, nor are we in the future where it might happen again.

If we want to change post-traumatic reactions, we have to access the emotional brain and do “limbic system therapy”: repairing faulty alarm systems and restoring the emotional brain to its ordinary job of being a quiet background presence that takes care of the housekeeping of the body...¹³⁶

Studies show that “actions that involve noticing and befriending the sensations in our bodies can produce profound changes in both mind and brain that can lead to healing from trauma,”¹³⁷ and that “physical self-awareness is the first step in releasing the tyranny of the past.”¹³⁸ We must feel our body and find rest in our rhythm. We are here, now. Heart beating, breath breathing, here and now. Our hearts cannot actually beat and our lungs cannot breathe in the past or the future, we can only do that in the present.

Trauma victims cannot recover until they become familiar with and befriend the sensations in their bodies... [they] need to become aware of their sensations and the way that their bodies interact with the world around them.¹³⁹

By working with breath, movement, and touch, we can recalibrate our autonomous nervous system,¹⁴⁰ and thankfully we humans have an inherent inclination towards these self-soothing practices. Touch, as well as rhythmic or vibratory expressions like humming, singing, and rocking come naturally to us. We rub a sore belly, rotate aching joints, and hold the parts of our body that are in a state of discomfort.¹⁴¹

The most natural way that we humans calm down our distress is by being touched, hugged, and rocked. This helps with excessive arousal and makes us feel intact, safe, protected, and in charge.¹⁴²

Furthermore, fascial studies have shown that “manual low frequency oscillations can induce muscle relaxation.”¹⁴³ Oscillations can modulate the “pain gate in the central nervous system” and rhythmic, pendular therapies of the fascia have a beneficial effect on our nervous system.¹⁴⁴

136 Van der Kolk. *The Body Keeps The Score: Mind, Brain and Body in the Transformation of Trauma*, 205.

137 Ibid., 275.

138 Ibid., 101.

139 Ibid., 100.

140 Ibid., 64-5.

141 Menakem, *My Grandmother's Hands: Racialized Trauma and the Pathway to Mending Our Hearts and Bodies*, 141-147

142 Van der Kolk. *The Body Keeps The Score: Mind, Brain and Body in the Transformation of Trauma*, 215.

143 Tozzi, “Fascia Science and Clinical Applications: Editorial | Does Fascia Hold Memories?”, 263.

144 Ibid., 263.

*Vibration has been demonstrated to be a critical epigenetic factor on regulating the microenvironment of the extracellular matrix, thus provide [sic] a basis for reducing tissue adhesions and improving function.*¹⁴⁵

Learned mindfulness techniques can help us manage the chaos of our perceived environment as well as our “experience of time”¹⁴⁶ by clearing the mind, calming the nervous system, and grounding our bodies in the present.

*By being able to observe the trauma from the calm, mindful state... mind and brain are in a position to integrate the trauma into the overall fabric of life. This is very different from traditional desensitization techniques, which are about blurring a person's response to past horrors. This is about association and integration—making a horrendous event that overwhelmed you in the past into a memory of something that happened a long time ago.*¹⁴⁷

Mindfulness practices also link us to our bodies and strengthen our embodiment, proprioception, and interoception, and ground us in the present. Sitting or walking meditation, yoga, and breath awareness practices center around proprioception as well as rhythmic awareness. They help us soothe ourselves, and in doing so, counter the effects of trauma on our bodies and minds by calming our vagus nerve and strengthening our medial prefrontal cortex, which is a “cornerstone of recovery from trauma.”^{148, 149}

*Ultimately, through these exercises, one learns how to deal with one's emotions, as one gets to know them better and no longer pushes them away. One is no longer helplessly at the mercy of emotions... because the accepting distance from one's emotions helps to disrupt the automatic emotional reaction.*¹⁵⁰

Somatic and limbic system therapies have also proven to be very effective for trauma rehabilitation in clinical environments. Somatic Experiencing (SE) therapy is one modality where the practitioner's goal is “to release [the] traumatic activation” of the patient by teaching them to “integrate body awareness into the psychotherapeutic process” and “increas[e] [the patient's] tolerance of bodily sensations and related emotions.”¹⁵¹ Unlike other modalities, this therapy “does not require reliving the traumatic events and discussing them in detail,” but rather “focuses on creating awareness of inner physical sensations, which are seen as the carriers of the traumatic memory.”¹⁵²

145 Tozzi, “Fascia Science and Clinical Applications: Editorial | Does Fascia Hold Memories?”, 263

146 Wittmann, *Altered States of Consciousness: Experiences out of Time and Self*. Cambridge, 29

147 Van der Kolk. *The Body Keeps The Score: Mind, Brain and Body in the Transformation of Trauma*, 224

148 Ibid., 96

149 Ibid., 206

150 Wittmann, *Altered States of Consciousness: Experiences out of Time and Self*. Cambridge, 56

151 “Somatic Experiencing Therapy: How It Works and How to Do It.” Dr. Axe, <https://draxe.com/health/somatic-experiencing-therapy/>. Accessed 7 Nov. 2020.

152 Ibid.

Another established somatic approach to treating trauma patients is called Sensorimotor Psychotherapy™ (SP). Developed by Dr. Pat Ogden in the late 70's, it focuses on re-wiring “the bodily experiences of the individual as a gateway to awareness and improved mental health” in a safe environment, and acknowledges that because those affected by trauma are “sometimes completely unaware of the existence of unresolved trauma... traditional talk therapies may fail to unearth these unconscious issues.”¹⁵³

Eye Movement Desensitization and Reprocessing (EMDR) is “a psychotherapy treatment that was originally designed to alleviate the distress associated with traumatic memories,” in which the patient is guided to focus on “emotionally disturbing material in brief sequential doses while simultaneously focusing on an external stimulus.”¹⁵⁴ This focus on an external stimulus typically takes the form of the patient following the movement of their therapist's finger with their eyes as it moves from side to side in front of them, but hand tapping and audio stimulation can also be employed.¹⁵⁵ This method has been shown to be very effective in reprogramming traumatic responses. Indeed, Bessel van der Kolk devotes an entire chapter to it in his foundational text (cited extensively in this paper), *The Body Keeps The Score*.

Neuro-feedback, and/or emotion-focused therapy (also known as process-experiential therapy) have also been shown to be effective somatically oriented therapies for patients with PTSD.¹⁵⁶

I learn about Emotional Freedom Techniques (EFT), also known as Tapping, as a way to calm my anxiety and panic attacks. I tap on specific points on my face, chest and scalp, over and over again while repeating mantras of safety and calmness. I do it in the morning when I wake up, and throughout the day. I do it in the bathroom at work. I tell all my friends about it.

What many of the therapeutic practices mentioned above have in common is that they are body-based, and engage repetitive movement to engage the body and soothe the vagus nerve without having to engage the verbal, story-telling, and risk-noticing parts of the brain.¹⁵⁷

I stop abusing substances, get sober, and start doing yoga and meditation emphatically. I am introduced to holotropic breathwork therapy. I go to my friend's place in upstate NY as often as I can to get my hands in the dirt and help them farm.

I begin to work on a daily embroidery diary, where I pick a length and color of thread to represent the feeling of the day, and then stitch it to expand a starburst pattern.

I begin to feel myself.
I begin to heal myself.

153 *Sensorimotor Psychotherapy*. <https://www.goodtherapy.org/learn-about-therapy/types/sensorimotor-psychology>. Accessed 7 Nov. 2020.

154 What Is EMDR? – EMDR Institute – EYE MOVEMENT DESENSITIZATION AND REPROCESSING THERAPY. <https://www.emdr.com/what-is-emdr/>. Accessed 7 Nov. 2020.

155 Ibid.

156 Menakem, *My Grandmother's Hands: Racialized Trauma and the Pathway to Mending Our Hearts and Bodies*, 306.

157 Van der Kolk. *The Body Keeps The Score: Mind, Brain and Body in the Transformation of Trauma*, 253.

ART AS THERAPY

The fundamental issue in resolving traumatic stress is to restore the proper balance between the rational and emotional brains, so that you can feel in charge of how you respond and how you conduct your life.... Recovery from trauma involves the restoration of executive functioning and, with it, self-confidence and the capacity for playfulness and creativity.¹⁵⁸

The combination of the chaotic and unreliable nature of traumatic memory¹⁵⁹ in concert with the inadequacy of words¹⁶⁰ to describe the triggering, visceral and fragmented feeling of trauma in the body and mind can make talking about trauma not only an inadequate method for sharing such intense feelings, but it can also re-trigger the feelings of fight, flight or flee and all of the physiological and hormonal changes they entail.

It can also often feel impossible for trauma victims to discuss their trauma with close contacts and loved ones. A fear of alienation, and often a sense of shame from feeling as if they had brought the experience on themselves, can make a person feel at risk of pushing people away. They might feel too needy, and unworthy of the time, kindness, patience and attention that it takes to really be there for someone dealing with trauma. They might fear that by sharing their struggle with trauma they risk pushing away the very people who make them feel loved and safe.

A few weeks earlier, my mom had poked at me, in her way, and we had a conversation about how sometimes children, even ones with great parents, are too scared to talk to their parents about the trauma they experience...

When I went to visit my parents after the Time article, my dad asked, "Why didn't you tell us about what happened?" and I said, "Dad, I was scared." I said, "I thought I would get in trouble."

When I was twelve, I was so ashamed of what had happened, of everything I had done with a boy I wanted to love me leading up to what happened with him and all his friends, of the aftermath. I felt like it was my fault.¹⁶¹

Human language and storytelling evolved to share things outside of us, about elements of our external environment relating to our survival, not to share intimate emotions and feelings. The language center is in fact "as far removed as possible" from the self-awareness part of the brain.¹⁶²

158 Van der Kolk. *The Body Keeps The Score: Mind, Brain and Body in the Transformation of Trauma*, 205.

159 Ibid., 231-232.

160 Ibid., 43.

161 Gay, *Hunger: A Memoir of (My) Body*, 286-7.

162 Van der Kolk. *The Body Keeps The Score: Mind, Brain and Body in the Transformation of Trauma*, 237.

*The capacity of art, music, and dance to circumvent the speechlessness that comes with terror may be one reason they are used as trauma treatments in cultures around the world.*¹⁶³

With artistic expression we can get closer to and massage the sensitive, broken, and scary internal parts of ourselves without having to name or interact with them directly. We can engage in repetitive habits and movements that are healthy and expressive rather than oppressive and self-sabotaging. We can feel that thing in our body, scratch the proverbial itch, rub the phantom ache, dance around the pain, and relieve the pressure of it from our body by expressing it through action without having to point to it or name it explicitly.

*Art therapy clients with PTSD communicate information about their trauma more articulately through creating imagery than through describing it verbally—information absorbed through their senses during trauma as fragments such as visual images (which some researchers feel is the most powerful input), smells, sounds, physical sensations, intense feelings, and emotions. Drawing, painting, or sculpting with clay, for example, may be the most effective ways for these clients to initially recall and convey what happened, and how what happened affects them, before they can verbalize what happened.*¹⁶⁴

The first texts on clinical art therapy were published in the late 19th century by French psychiatrists Ambrose Tardieu and Paul-Max Simon, both of whom dealt with “the similar characteristics of and symbolism in the artwork of the mentally ill”.¹⁶⁵ Their work centered around analyzing the art of patients as a method for categorizing and diagnosing specific types of mental illness or traumatic events in their patients.¹⁶⁶ Later, in the late 1940’s, art therapy was further championed out of necessity as a novel way to treat the shell-shocked and traumatized returning from war.¹⁶⁷

By this time, occupational therapies that engaged the body and mind in productive, repetitive, and sometimes even creative methods were already in practice. Women “assisted in the kitchen, polished furniture, sewed or engaged in other occupations, while men helped in the garden.”¹⁶⁸ Other occupational therapies included working on the farm, assisting in the management of the superintendent’s house, or conducting assembly work in a nearby munitions factory.¹⁶⁹

*Solitary women, working out the problems of their lives through the thread.*¹⁷⁰

163 Van der Kolk. *The Body Keeps The Score: Mind, Brain and Body in the Transformation of Trauma*, 243.

164 Curtis, *Women, Trauma & Visual Expression*, 173.

165 Ford-Martin, Paula Anne. “Art Therapy.” Edited by Jacqueline L. Longe. *The Gale Encyclopedia of Medicine* Vol. 1. 6th ed., no. Gale in Context: Science (2020): 511–14.

166 Ibid.

167 Robson, Belinda. “A History of the Cunningham Dax Collection of ‘Psychiatric Art’: From Art Therapy to Public Education.” *Health and History* 1, no. 4 (December 1999): 330–46, 333.

168 Robson, “A History of the Cunningham Dax Collection of ‘Psychiatric Art’: From Art Therapy to Public Education.” 336.

169 Ibid.

170 The Museum of Modern Art. “Rosanne Cash, the River, and the Thread | Magazine | MoMA.” Accessed July 11, 2020. <https://www.moma.org/magazine/articles/212>.

During those many summers in suburban Indiana, I would sit on my grandma's living room floor, watching TV while crocheting or cross-stitching. My eyes would be glued to the screen—I rarely had to look down at my hands when I was crocheting because I could *feel* what I was doing. It was like dancing. I can still conjure up the feeling of completion/fulfillment/utter pride in my body that arose from each finished line of double crochet stitch, or each filled-in shape on the cross-stitch pattern. It felt so good. A feeling of satisfaction and completion, with a caveat that I could do it again, and again, and that I wanted to. The act of creating something grand from simple thread, feeling how a piece steadily grows under my busy fingers, and watching as a story or picture emerges, still soothes and empowers me now as it did then. It is sentimental, and it is meditation.

Clinical art therapy has since been proven to be effective not only in facilitating emotional catharsis, and triggering feelings of relaxation, stress relief and empowerment for patients with PTSD,¹⁷¹ but also in enabling in the patient a greater ability to understand their own internal landscape.¹⁷²

In this paper, however, I am not discussing art therapy practices in which the traumatized person is using art under the observation of a professional therapist in order to try to unearth a coherent version of an inexpressible story, one that has been buried and forgotten on purpose, one for which the very act of trying to remember renders it inaccurate. Rather, I am referring to the act of creative mark- and art-making as a personally motivated, intuitive expressive and somatic practice that can soothe trauma on a visceral, physical level.

*Artists generally need personal strength, support, and safety to flourish in their work. What does this mean for the artist who has experienced trauma and might not feel strong, supported, nor safe? This artist, in a way, can be acting as her own 'art therapist.' Her process, in and of itself, can become a healing entity, providing a 'protective and guiding structure.'*¹⁷³

When we witness or feel something that is outside of what is safe, outside of order, it is disordered from the way our body/brains expect the world to work. It can send our physiological systems and perception of time into chaos. Artistic expression that engages repetitive movement can activate the proprioceptive and interoceptive bodily mechanisms that soothe our vagus nerve and ground us in time. Artistic expression that employs repetitive mark-making, in both the action of creating and the visual of the finished work, can help give a sense of order to the chaos.

Talpazan was not just drawing a spaceship, but the process itself was trance-like, a meditative and therapeutic act, a suspension of time and space. This complete engagement

171 Ford-Martin, Paula Anne. "Art Therapy." Edited by Jacqueline L. Longe. *The Gale Encyclopedia of Medicine* Vol. 1. 6th ed., no. Gale in Context: Science (2020): 511–14, 511-512.

172 Ford-Martin, "Art Therapy," 512.

173 Curtis, *Women, Trauma & Visual Expression*, 145.

*in the creative process has a profoundly calming effect, providing a sense of timelessness or “flow,” a loss of self, and a temporary escape from painful memories and emotions—a form of catharsis that similarly occurred in... many other [outsider artists] engaged in creative expression.*¹⁷⁴

I’m 12 years old, laying on the floor of my mom’s new music classroom in Rabat, Morocco. We moved here just a month ago. It’s hard to make friends, there’s on 30ish kids in my grade. Kolapo, who seems to be the leader of the girls, has been giving me a hard time.

The school day is over. I head to my mom’s music classroom on the back side of campus behind the theater. She’s at her desk working on something and we won’t be heading home for at least an hour. I grab a white poster board, a ruler, and a handful of markers from her supply cabinet and lay on the floor. I divide the poster into squares, and slowly, with a line that never crosses itself, fill each square with its own tight, snaking, unique design.

I work on the poster for weeks. When it’s finished, it is a cacophonous checkerboard of colors and chaotic trails. But each color and line is contained perfectly in its own square.

Art-making is healing. Not only because it can mimic the repetitive, rhythmic, sensory, motor, and somatic modalities of healing, but also because it can assist the artist in communicating and releasing the trauma without having to employ language.

*Communicating fully is the opposite of being traumatized.*¹⁷⁵

Whether or not an artist is consciously or unconsciously processing or referencing their trauma in their work, they may communicate personal, cultural and/or collective trauma through it.¹⁷⁶ In the act of art-making, the artist is inherently releasing things from and of themselves that can often feel like a process of excavation of their internal landscape, along with a kind of reverse excavation of the piece itself from the void of a blank slate.

*During Cindy Nemser’s 1970 interview with Hesse... [she talked to Hesse about the ‘unconscious’ in her work, ‘things that are coming out of you that you don’t even realize.’ Nemser sensed that Hesse was ‘releasing’ or allowing feelings and emotions to ‘come through’ her work, perhaps feelings and emotions resulting from her past experiences. Hesse responded that she wanted this release and would let it happen. Hesse recognized that just as art explores life, art can be used to answer deep personal questions.*¹⁷⁷

174 Wojcik, Daniel. “Outsider Art, Vernacular Traditions, Trauma, and Creativity.” *Western Folklore* 67, no. No. 2/3 (Spring - Summer 2008): 179–98, 192-193.

175 Van der Kolk. *The Body Keeps The Score: Mind, Brain and Body in the Transformation of Trauma*, 235.

176 Curtis, *Women, Trauma & Visual Expression*, 183.

177 Ibid.

In her thesis, *Women, Trauma & Visual Expression*, Amy Stacey Curtis discusses how repetitive symbols within an artist's work can be both a metaphor for the fractured, chaotic and repetitive nature of trauma as well as a method for compartmentalizing and ordering the traumatic event in the artist's memory.

*James Hillman (The Mother of Analysis, 1972) states that creativity, in and of itself, is perceived by society as an ordering process, order seen as infallibility.*¹⁷⁸

She notes how female artists whose work “frequently held repetition, compartments, opposites (for example meticulousness coupled with randomness), spirals, circles, loops, and imagery which seemed autobiographical [including] Magdalena Abakanowicz, Lee Bontecou, Louise Bourgeois, Deborah Butterfield, Judy Chicago, Sonia Delauney, Audrey Flack, Helen Frankenthaler, Nancy Graves, Nancy Grossman, Jenny Holzer, Lee Krasner, Barbara Kruger, Agnes Martin, Ana Mendieta, Louise Nevelson, Faith Ringgold, and Betye Saar.”¹⁷⁹ Notably, all of these women either directly referenced their trauma in their work, or are, from biographical information, known to have suffered from traumatic experiences that shaped their lives.

*Repetition is a significant aspect of trauma, for example, repetitive nightmares and flashbacks; the rhythm and repetition of violence inherent in chronic trauma; the repetition of moments of fear, rage, pain, control and lack of control; and the repeated future trauma likely to befall a victim of childhood experiences. Repetition resonates with all coping mechanisms—dissociation, splitting, super-alertness, self-mutilation and compartmentalization—doing something repetitively to escape, to have control. Researchers throughout history have connected repetition to trauma.*¹⁸⁰

One contemporary artist who embodies this notion of order through repetitive mark-making, and specifically references her own process of healing from and dealing with trauma, is the inimitable Yayoi Kusama. Born in 1929, the Japanese artist is known for her work featuring repetitive phallic forms, pumpkins, patterns, mirrors, and polka dots. She creates work that resonates intensely with contemporary audiences—her museum shows have been record-breaking in attendance.

Kusama has been vocal about the trauma she experienced as a young girl (she was forced by her mother to spy on her father's affairs), the hallucinations from which she has suffered since childhood, and is known to have had several suicidal periods in her adult years.¹⁸¹ For more than 40 years, she has also “voluntarily lived in a psychiatric hospital” while continuing to work at her studio with a team of assistants, “making what she refers to as Art Medicine.”¹⁸² Misha Yoshitake, Curator of the Hirshorn Museum, describes her work as follows:

178 Curtis, *Women, Trauma & Visual Expression*, 192.

179 Ibid., 173.

180 Ibid., 209.

181 *Need to Escape Reality? Step into Infinity with Yayoi Kusama*. PBS News Hour, 2017, https://www.youtube.com/watch?v=-3k-86WrmHQ&feature=emb_logo.

182 Ibid.

*Her work is very process oriented, meaning that there is a very lengthy, physical labor that goes on and of the repetition of certain motifs like the nets or the polka dots, and it expands organically... It's about life, it's about our mortality, it's about filling a void that she has experienced, and that incessant energy, that desire to connect with people, I think it's about the clarity of vision and also of perception... Art for her is a form of therapy, she needs the art, or else, she will probably not survive. She is somebody who needs to have a ritual every day of painting.*¹⁸³

Kusama's work also directly references the notions of infinity, and the stretching out of time and space, both figuratively and literally. With her obsessive use of lights, dots and mirrors in her *Infinity Rooms*, and labor intensive, massive *Infinity Net* paintings of wave-like petals, her work truly epitomizes the capacity of repetitive art and mark-making to self-soothe. Yayoi Kusama has discussed the effects of this repetition in her work:

*The same things piled one on top of another creates an expanding world that reaches out to the edges of the universe. That is the simple image I have. This effect of continual repetition calls out to the human senses, and in return, deep inside of our heart, we yearn for true amazement.*¹⁸⁴

Another group of artists whose work frequently employs repetitive mark-making or gesture are “Outsider Artists” (a problematic term for many reasons¹⁸⁵). First coined “art brut” or *raw art* by Jean Dubuffet (1901-85), it described “unspoiled art created by children, indigenous people, and the mentally ill”¹⁸⁶ as well as art “made by people free of artistic training who were ‘untouched’ by culture, and existed outside of or against cultural norms, thus serving as a critique of the pretentious and artificial nature of contemporary art.”¹⁸⁷ At other times it has been called “Psychiatric Art” by those interested in it first in a clinical sense before going on to create vast collections that can now be considered part of the canon of art history. It was relabeled “outsider art” by Roger Cardinal in 1972, and the term now is “generally understood to refer to people with no formal artistic training, who are isolated from dominant culture and the mainstream art world, and who create art that is idiosyncratic or without precedent.”¹⁸⁸

These artists are unable to express themselves “effectively” due to disability, institutionalization, language or speech pathology barriers, the aforementioned inadequacy of words that comes with traumatic imprinting, or their inability to speak or communicate coherently. Therefore they use alternative and creative forms of expression to intuitively excavate their internal landscape. They paint, sculpt or sew often without knowledge of or reference to the canonical history of art, or the desire to be recognized within that system, but rather from an inherent and intuitive urge to express themselves creatively. One

183 *Need to Escape Reality? Step into Infinity with Yayoi Kusama*. PBS News Hour, 2017, https://www.youtube.com/watch?v=-3k-86WrmHQ&feature=emb_logo. (Oct. 15).

184 *Ibid.*

185 Koppers, Petra. “Diversity: Disability.” *Art Journal* 75, no. No. 1 (Spring 2016), 93.

186 Lejsted, Mia, and Johannes Nielsen. “Essay: Art Created by Psychiatric Patients.” *The Lancet* 368, no. 10–11 (December 1, 2006): Supplement. [https://doi.org/https://doi.org/10.1016/S0140-6736\(06\)69906-6](https://doi.org/https://doi.org/10.1016/S0140-6736(06)69906-6).

187 Wojcik, “Outsider Art, Vernacular Traditions, Trauma, and Creativity”, 179.

188 *Ibid.*

gets a sense that this is perhaps their only way of communicating their internal landscapes fully, and that they must do so urgently.

*Emotional trauma may persist when individuals feel powerless to confront or express their suffering. The act of creating material objects not only may externalize unspeakable emotions and conflicts, but it is one way to regain a feeling of control over one's life and these overwhelming emotions. Furthermore, the sense of increased self-esteem and the local acclaim that may result from creating things may help to offset feelings of loss, loneliness, and despair.*¹⁸⁹

Work that falls in this category is celebrated in heritage collections such as the Prinzhorn at the Heidelberg University Hospital, the Sammlung Walter Morgenthaler Psychiatrie-Museum, Bern. A tour through the Gugging Museum on the outskirts of Vienna, Austria, or a flip through the catalogue of Flying High, an Art Brut exhibition at the Kunstforum Wien in 2018, reveals work after work and artist after artist employing obsessively repetitive mark-making, motifs and gestures.

Included in Flying High were two artists that stand out as exemplary for the purpose of this paper, Judith Scott and Guo Fengyi:

Judith Scott (1945-2005), born with Down Syndrome and undiagnosed as deaf for decades, was deemed “unteachable” and institutionalized at the age of 7. Deprived of attention, and severely alienated from her family and twin sister,¹⁹⁰ she developed behavioral issues and “disappeared off the institution’s reports for decades.”¹⁹¹ Forty years later, after her sister took custody of Judith and enrolled her at the Creative Growth Art Center in Oakland, CA, Judith’s behavior “changed completely” when she began using wool, string, and any other form of pliable fibers she could get her hands on to fastidiously wrap and tie objects (which she collected from around the Center, and included items such as other peoples’ shoes, keys, and a chair) together in bulbous, free standing sculptures.

*Lippard was conscious of this concept in 1976, “Repetition can be a guard against vulnerability—a bulletproof vest of closely knit activity”—and repetition is one way to contain anger, and to fragment overwhelming wholes.*¹⁹²

I steal, from friends, stores, parents. I need what others have. I would take the food right out of my boyfriend’s mouth.

Guo Fengyi (1942-2010), a self-taught artist who used everyday materials such as ballpoint pens and the backs of calendars to produce stunning life-sized works of biomorphic figures made of thousands of lines of wispy filaments, began creating these works in her mid forties after being forced to retire from

189 Wojcik, “Outsider Art, Vernacular Traditions, Trauma, and Creativity”, 194.

190 Scott, Joyce Wallace. *Entwined: Sisters and Secrets in the Silent World of Artist Judith Scott*. Boston: Beacon Press, 2016.

191 Feilacher, Johann. *Judith.!* St. Polten: Residenz Verlag, 2010, 9.

192 Curtis, *Women, Trauma & Visual Expression*, 202.

her factory job by crippling arthritis. She was also a devotee of qigong, which she claimed “not only improved her health, but also brought out visions deeply embedded in the body and mind that led to the creation of over 500 drawings in her lifetime.”¹⁹³

*By encapsulating the memories of trauma into multiple units within the unconscious, they are “organized” and protect the victim from becoming too overwhelmed.*¹⁹⁴

Daniel Wojcik, in his paper *Outsider Art, Vernacular Traditions, Trauma, and Creativity*, highlights several examples of American outsider artists that seemed to obsessively create their work, on a grand scale, in response to internal struggles and trauma.

*In studying the lives of people described as outsiders, one notices that a number of them created art in response to adversity, suffering, or personal crisis.*¹⁹⁵

Sam Rodia (1879-1965) created a complex of seventeen towers, the tallest nearly 100 feet tall, in South Central Los Angeles. Meticulously pieced together and covered in mosaic tiles, they echoed in both form and material the processional towers of religious street festivals in his native Italy. The towers seem to reconnect him through practice to a community from which he was isolated (he was the only Italian in the neighborhood), while providing a soothing therapeutic somatic practice in response to the many known traumas he experienced as a poor, migrant, alcoholic divorced from his wife and estranged from his children.¹⁹⁶

“Trauma becomes like an internal inhabitant. It colonizes you.” Griselda Pollock¹⁹⁷

I am a “third culture kid.”

Tressa “Gramma” Prisby (1896-1988) needed a place to store her massive pencil collection. When she found that concrete blocks were too expensive, she went foraging in the dump near her home in Simi Valley, California, and found hundreds of glass bottles. First mixing the concrete by hand, she built a house out of glass bottles, and then another and another.¹⁹⁸ Her complex of glass bottle houses, known as Bottle Village, is now “a one-third acre site covered with an assemblage of shrines, wishing wells, mosaic walks, structures and follies.”¹⁹⁹

Although famously friendly with visitors and eager to engage them with tours, songs, stories and jokes,

193 COBO Social. “Outsider Artist No More: Why We Should Pay Attention to Chinese Artist Guo Fengyi,” March 11, 2020. <https://www.cobosocial.com/dossiers/guo-fengyi-drawing-center/>. Accessed October 10, 2020.

194 Curtis, *Women, Trauma & Visual Expression*, 201.

195 Wojcik, “Outsider Art, Vernacular Traditions, Trauma, and Creativity”, 187.

196 Ibid., 184-186.

197 Hessel, Katy. ‘Griselda Pollock on Alina Szapocznikow’. *The Great Women Artists*. 2020. <https://podcasts.apple.com/us/podcast/the-great-women-artists/id1480259187>.

198 *Bottle Build Gramma*. 2018, <https://www.youtube.com/watch?v=vEZXwAvres>. Accessed 30 Nov. 2020.

199 *Gramma Prisbrey’s Bottle Village Home*. <http://www.bottlevillage.com/>. Accessed 8 Nov. 2020.

she has acknowledged that she had trouble speaking about the abundance of tragedies she experienced since a young age, particularly the deaths of her children.

Prisby's bottle village not only provided a means of dealing with suffering through creativity, but it helped to decrease her sense of loneliness by creating interactions with visitors.²⁰⁰

One can feel the sense of order created through the salvaging of discarded, fragile material. The rooms of her structures, due to their construction from many shapes, sizes and colors of recycled glass, glow and radiate color from within.²⁰¹

There is a resemblance between the processes of aesthetic recycling and grieving: grievors experience loss—recyclers save things that have been lost; in grief, one's life is in pieces; but recycling enables one to salvage pieces; to physically and emotionally put things back together, creating an increased sense of order, beauty, and self with.²⁰²

I constantly pick up and take home discarded ephemera and materials from the trash. Paper or books for collage, cardboard and shower doors as canvases, found photographs...

Hindu and Buddhist Mandalas, Native American sand painting, Aboriginal dot paintings, and weaving traditions from all over the world, to name just a few, are associated with spirituality, healing, and diagrams of the vastness of the universe. These indigenous modes of spiritual and shamanistic art also employ repetitive motifs and gestures for healing, worship and expression of the divine, or give form to the unexplainable.

In the process of reflecting the world, we organize it into entities: we conceive of the world by grouping and segmenting it as best we can in a continuous process that is more or less uniform and stable, the better to interact with it... We draw lines over the world, dividing it into sections; we establish boundaries, we approximate the world by breaking it down into pieces. It is the structure of our nervous system that works in this way. It receives sensory stimuli, elaborates information continuously, generating behavior. It does so through networks of neurons which form flexible dynamic systems that continuously modify themselves, seeking to predict — as far as possible — the flow of information intake. In order to do this, the networks of neurons evolve by associating more or less stable fixed points of their dynamic to recurring patterns that they find in the incoming information, or — indirectly — in the procedure of elaboration themselves. If this is so, then 'things' like 'concepts' are fixed points in the neuronal dynamic, induced by recurring structures of the sensorial input and of the successive elaborations. They mirror a combination of aspects of the world that depends on recurrent structures of the world and on their relevance in their interactions with us.²⁰³

200 Wojcik, "Outsider Art, Vernacular Traditions, Trauma, and Creativity", 190.

201 Ibid., 187-190.

202 Ibid., 190.

203 Rovelli, *The Order of Time*, 152.

Feeling the overwhelming nature of the human experience, the vastness of space or the divine, the need to heal, the loss of agency or control due to institutionalization, disability, or the inability to express oneself, or a combination of any or all of the above, are all experiences that can result in embedded, embodied trauma from the “too much, too fast, or too soon.”²⁰⁴ What all of the artists mentioned in the previous pages have in common in their response to these types of experiences is their persistent, repetitive mark-making, motifs and gestures, seemingly in response to the chaos those experiences can invoke.

“The greater the threat of chaos, the more we stress the importance of order. We hold up order before our eyes like a protective shield whenever we feel the approaching chaos.”

Joanne Wieland-Burston ²⁰⁵

The marks, bottles, tiles, and threads are not a graphic representation of the trauma itself, but rather a physical expression of compartmentalizing the chaos: putting things—the body, the mind, memories, feelings and experiences—into order. By rhythmically metabolizing trauma through art, it is possible to not only soothe the nervous system through somatic, physical practice, but also to put that practice, that healing, and that body back into order, and order it in space and time.

204 Menakem, *My Grandmother’s Hands: Racialized Trauma and the Pathway to Mending Our Hearts and Bodies*, 7.

205 Curtis, *Women, Trauma & Visual Expression*, 192.

PROCESSING

Although I had started embroidering as a child, I didn't begin again in my adulthood until I was in my late twenties when I started a small series of autobiographical embroidery pieces. At the end of the day, I would pick a color that I felt matched that day, either because it was emotionally evocative, or represented someone or something that had featured prominently. I would then pick the length of thread based on how much I felt had happened that day. Then, I would create a starburst pattern radiating out from the middle, stitching a point of the starburst that angled and pointed in the ways and to the degree my day had angled and pointed. I don't know where the impetus to create something like this came from, but it was the first time that I really felt that I had made worthwhile work. "I *made* something," I said to my friend Juliana.



Autobiographical Needlepoint, Hand-embroidered cotton thread on cotton Aida, 30cm x 30cm, 2014

Many years later I would finally return to embroidery after working for a year on a sculpture titled *THE GREAT WALL* for *Our Place in Space*, an exhibition which ran from June to November of 2018 at the Naturhistorisches Museum. The sculpture had been fabricated from plexiglass and steel, and I had spent hours and hours painting the plexiglass with glass paint. I was also going through a significant break up. I needed to do something soothing, soft and tactile with my hands.

Before the show was deinstalled, I dug my old embroidery materials out of my parents' basement storage and began to experiment.

I instinctively began to create a piece that echoed a pattern I had drawn over and over again in my adult journals—an interlocking motif of chevrons that had been simplified down from interlocking 3D cubes. I could expand this motif out into countless combinations. The overlap of these tightly-ruled geometric forms stitched in contrasting colors and started at random points of a grid so that they didn't overlap "properly" was successful aesthetically and the process was soothing. I was geometrically expressing the theory and philosophy about which I was reading, and in doing so understanding the concepts on a more visceral level.

As soon as I started embroidering again, I couldn't stop. The obsessive stitching of my childhood came roaring back through the muscle memory of my hands. It was so soothing; my hands loved the work. I could stitch for hours and forget about the world around me. My entire practice shifted to embroidery work.

I work(ed) without patterns or sketches. I create(d) without an end-goal in mind, but rather to see what will emerge. Sometimes I establish geometric rules for a piece—one could even call them algorithms—before I begin to stitch, but they are guidelines with which I'm hoping to learn something more about the subject matter of the piece and/or the particular interaction of geometry.

I began again to create "body maps"—small autobiographical pieces in which the color and length of thread and direction of my chevron patterns are synesthetic translations of my interior world. I also used the same process of thread selection to work out several theoretical and philosophical concepts graphically.

The pieces are interior maps in the sense that I use my body compass (as I call it) to guide my decisions.

I have trained my intuition for years — designating one side for yes the other for no in answer to a question, this way/that way on a street or a map when I am trying to find my way, this one/that one when I'm trying to make a decision. I feel a pull on one side of my body or another, as if a big magnet was buzzing my cells. Even when the answer I'm getting doesn't make logical sense, honoring that "body truth" perpetually leads me to what typically feels like a best case scenario. Maybe that has to do with trust. Or resolution. It also feels incredibly feminine.

It feels human — I am listening to and feeling my body-wide web of neurons that pull information from sources seen and unseen. I am literally using my "gut" to decide. And yet at the same time it also feels mechanical. I try to take all emotion out of the decision making process. I am using a tool to find my truth.²⁰⁶

206 Excerpt from author's talk at Vienna Art Week, MAKING TRUTHS, Panel "*Outside the Box: Scientific and artistic narratives & tensions in the field between humanism, feminism and digital data*". Nov 2019 | Vienna.



Embrecord 1, Hand-embroidered cotton thread on cotton Aida, plastic hoop, 24 x 11.5 cm, 2018

I use it to select fabric, hoop size, color and length of thread, subject matter and design direction. Most of these elements are synesthetically translated from an occurrence, subject or emotion I want to dwell on or delve into. I orient my first and then subsequent stitches on the fabric in relation to where I feel it *in my body*. When I get quiet and take a deep breath, am I pulled towards the red or the green thread? Before I begin to stitch, is the pull in a lifting motion in my right shoulder? If so, then I begin stitching in the upper right quadrant of the fabric and move outward from the middle. Then I watch as these communicates from my body take shape in the piece.

I didn't know of Maria Lassnig's "body awareness" when I began using my body compass to make art, but when I later learned of her self-coined term for painting only the parts of her body she could feel (even if that meant leaving out essential limbs),²⁰⁷ I felt an immediate deep knowing of her process. Her description of her body awareness guiding her art resonates with how I use my own body compass:

I step in front of the canvas naked, as it were. I have no set purpose, plan, model or photography. I let things happen. But I do have a starting-point, which has come from my realization that the only true reality are my feelings, played out within the confines of my body. They are physiological sensations: a feeling of pressure when I sit or lie down, feelings of tension and senses of spatial extent. These things are quite hard to depict. ²⁰⁸

By choosing either a theme to ruminate on, or a period of time to "journal", and then using my body compass and output to explore it, I generate a deeper understanding of the subject in question. I solidify my "story" of it by activating both my left brain and right brain simultaneously by stitching and ruminating (color/movement) simultaneously. I activate a new dimension within which I can think about the subject based on the geometric interactions of the colors, patterns and final outcome.

In early 2019, two ideas converged in my mind, and my thesis began to take form. The first idea being that I knew the paper would focus on how trauma was stored in the body, how the experience of trauma and its repercussions related to the feeling of being outside of time (which connects to the theory of time being non-linear in the first place), and how repetitive movement and mark-making was a powerful mechanism for healing by grounding us in our bodies in the present. The second would be that I would make an embroidered true-to-life-sized map of my body to illustrate the aforementioned processes—stitching where I felt the tension, the itch, or the ache of remembered or triggered trauma. It would be a diary of the *bodytime* between that moment and my thesis show sometime in 2021.

Oh god, are they going to think this is "victim art"?^{209, 210}

207 Hessel, Katy. 'Natalie Lettner on Maria Lassnig'. *The Great Women Artists*. 2020. <https://podcasts.apple.com/us/podcast/natalie-lettner-on-maria-lassnig/id1480259187?i=1000486434853>.

208 *Maria Lassnig — Artists | Hauser & Wirth*. <https://www.hauserwirth.com/artists/2795-maria-lassnig>. Accessed 8 Nov. 2020.

209 "Confronting Head On the Face of the Afflicted - The New York Times." Accessed November 8, 2020. <https://www.nytimes.com/1995/02/19/arts/confronting-head-on-the-face-of-the-afflicted.html>, 1

210 "'VICTIM ART': Philistinism All Over Again (Published 1995)." *The New York Times*, March 5, 1995, sec. Arts. <https://www.nytimes.com/1995/03/05/arts/l-victim-art-philistinism-all-over-again-456295.html>.

My embroidery work, stitch after stitch, could serve as a way to both illustrate and practice the concepts I was going to write about. The motif I was already stitching in smaller works was dynamic—it reminded some of birds, but to me, it felt like energy and electrical diagrams. The fragmentary nature of time as we remember it, the winding path of our lives affected by infinite un-remembered moments, the fragmented nature of traumatic memory, and the thermodynamic nature of the *timecloud* itself all felt perfectly articulated in the way the thread popped up and through the fabric. The micro-repetitive nature of the stitching fell in perfectly with my narrative healing—indeed, I had already been using it to self-soothe my whole life.

Here was my subject matter. I just had no idea that by the time it was time to start stitching we would all be in the early throes of a global pandemic.

The first time I see an article about Coronavirus online is in January. It is on BBC, I am at work, it is still local to Wuhan and just a few cases of people who have visited the market. I immediately fixate on it. I check all the news websites I usually check constantly doom scrolling for more information. But they don't have it, it is just a little blurb, it doesn't even have a name yet.

As information and cases grow, I obsessively check the news. As soon as I am conscious in the morning I think about it, as soon as I get out of bed I check the news. *Where is it now? How deadly? How many cases? How is it spreading?*

I talk to my friends about it. No one thinks it's a big deal.

I have tunnel vision in the hallway of the school where I work as I notice just how easily and quickly the virus could spread there (kissing highschool kids, cafeteria salad bar and library door handles, little ones touching and sharing everything).

Then it starts to spread. Cases outside of China. Italy, so close. Half the school vacationed there in February.

I crash after about a month, in late February. For three days I am physically sick with anxiety. My throat hurts. I check my temperature obsessively. It vacillates between 36.3 and 38.5. Do I actually have a fever or is my temperature an artifact of my anxiety? Is it allergies?

...many people report a low grade fever as a result of their anxiety, and stress does have a known impact on the body's ability to fight infections, so it wouldn't be a surprise to find out that stress has, in fact, caused a mild fever in your body.²¹¹

211 Griswold, Denise, MSC, LCAS. *Can Anxiety Cause a Fever?* 27 Oct. 2018, <https://www.calmclinic.com/anxiety/symptoms/causing-fever>. Accessed Aug 24, 2020.



Work in progress (Contagion), Hand-embroidered cotton thread on cotton Aida, 30x30cm, March 2020

After about 3 days of nothing but laying on the couch, rotating between checking my temperature, checking the news, and dissociating with a terrible reality dating show (something so far removed from what I would normally watch or care about that it does the trick of letting me turn my brain off), I have a moment of clarity:

"I am no good to myself, my partner, or my parents if I'm curled up in a ball waiting for this to kill us."

Somehow, I am able to pop out of it. I could look at it and see what it was doing to my body and mind. And I could stop it. I could interrupt the pattern.

Rather than moving into substance abuse to try to numb or bury the sensation, I looked at it, straight on, and came to terms with it. I wanted—needed—to be stronger than this experience.

Then a case was diagnosed in Vienna, then more and more. I knew we would be forced into quarantine. I didn't know how bad it would get.

It was my actual, greatest fear, coming at me head on. It felt like my whole life I had known this was coming. An infectious disease with no known cure, racing across the globe, coming for me and my loved ones.

I had already designed an embroidery hoop that was big enough for my project. It was of the right proportions so that it would envelop my whole body. In the days leading up to the lockdown, I frantically communicated with the wood workshop at the Angewandte, they promised they would have the hoops ready in time after weeks of delays.

I had already been stocking my kitchen for weeks, making sure my partner and I could last for weeks without going to the grocery store. So while most people were frantically hamster shopping for groceries, I was frantically art supply shopping, getting everything I needed for my project: thread, 2x3 meter pieces of Aida cloth in different weights and colors, and ratchet straps to secure the cloth to the outside of the hoops.

On March 12, 2020, as soon as I got out of work at 15:15, I rushed downtown to pick up the hoops before the workshop closed. I draped them over my body to carry them up and out of the building. I walked them to the studio on Salzgries, collected everything I needed from the studio, and then ferried everything home in an Uber.

The next day, Friday, March 13, was the last day of in-person work. That weekend my partner and I, along with the rest of Vienna, went into lockdown.

Friday, November 13, we go into our second heavy lock down after Austria becomes the number one hotspot in the world according to growth by population.

We received a starter Scoby from a friend, and my partner had started making Kombucha a few months before (due to the brew's antimicrobial properties, it is easy to make at home with a basic setup). Made by leaving black or green tea, sugar, liquid from an earlier batch and a SCOBY (symbiotic culture of bacteria and yeast) to ferment over the course of 1-3 weeks, the drink is touted as a healing beverage due to its vitamin, amino acid, and other nutritious compounds and microbial properties. The Scoby is also sometimes referred to as the "mother," since it both reproduces during the brewing period (new Scobys can form on top of the brew, a property that I am employing here in my work), and births the beverage, so to speak.

Kombucha originated in Northeast China (historically referred to as Manchuria) around 220 B.C. and was initially prized for its healing properties. Its name is reportedly derived from Dr. Kombu, a Korean physician who brought the fermented tea to Japan as a curative for Emperor Inkyo. Eventually the tea was brought to Europe as a result of trade route expansions in the early 20th century, most notably appearing in Russia (as "Kambucha") and Germany (as "Kombuchaschwamm"). Despite a dip in international popularity during WWII due to the shortage of tea and sugar supplies, kombucha regained popularity following a 1960s study in Switzerland comparing its health benefits to those of yogurt.²¹²

During the lockdown, my partner became even more enthusiastic about the fermented, bubbly, slightly yeasty smelling brew. We would have 5 or 6 liters fermenting at a time in the kitchen. I noticed how skin-like the new Scobys seemed to be, their color and texture like my skin, just more slimy.

The "tea of immortality" has come a long way from its reported beginning in China more than 2,000 years ago.²¹³

My work is about how the body has its own way of retaining memory, about growth and healing. It is about a felt experience that changes over time. I understood that in order to convey that my materials would need to be more organic so that they would hold an energy of cellular memory. Up until this point, all the materials I was using had been factory made: impersonal, dead, and mass-produced.

Early in 2013 I had seen the work of Susanne Lee, a pioneer in and advocate for biotechnology in textiles, who used Scoby as a leather-like material to make clothing. I knew that, at least on a material and aesthetic level, dried Scoby could be an interesting material substitute for the industrial Aida cloth that I had been working on. But I also had no idea what it felt like to work with Scoby, or if I would be able to treat the material in a way where it would suit my purposes.

I began to grow my own Scoby. I started with a 7.5 liter batch and a small rectangular transparent tupperware rather than the typical cylindrical large tall jars that kombucha is typically brewed in. I

212 Troitino, Christina. "Kombucha 101: Demystifying The Past, Present And Future Of The Fermented Tea Drink." Forbes. Accessed October 11, 2020. <https://www.forbes.com/sites/christinatroitino/2017/02/01/kombucha-101-demystifying-the-past-present-and-future-of-the-fermented-tea-drink/>.

213 "Are There Benefits to Drinking Kombucha? - The New York Times." Accessed November October 11, 2020. <https://www.nytimes.com/2019/10/16/style/self-care/kombucha-benefits.html>.

needed a wide container for the Scoby as it would grow on the top of the tea and therefore take on whatever shape of container it was in. At first, I used my body compass to tell me how much sugar and tea to add to the boiling water. I eyeballed the amounts first in a bowl on the side as the water boiled, and then made minor adjustments according to my body compass' "yes" (add more) and "no" (stop) signals.

The first small tests were successful in growing several layers of thinner Scoby that formed on the surface of the tea while the mother sank to the bottom. My first harvest yielded three thin layers. I separated one, and laying it on a backing of Aida cloth, fixed it to a small wooden embroidery hoop. I did not separate the other two, and stretched them together over a plastic embroidery hoop without a cloth backing, but with a steel mesh support circle underneath them to prevent the taught Scoby from sagging as it dried.

I left them outside in a sunny courtyard to dry for two days. The ants were attracted to the sweet, yeasty material and chewed small holes in both tests, while a raised and darkened grid pattern was left on the one left to dry on the steel frame. I realized that in both of these scenarios there was an instance of natural mark-making, and that those marks were recordings of the "memory" and "trauma" of the material skin. In the case of the Scoby left to dry on the metal frame, the steel mesh had almost left a tattoo of sorts, and in both instances the Scoby was scarred for life.



First tests, Scoby, aida cloth and wood frames, 2020

In subsequent tests, I began growing bigger and bigger Scoby in my apartment until I was confident that I could grow one that was big enough to cover my body from head to toe and shoulder to shoulder with extra on all sides.

First, I had to design and build a big-enough container to grow a piece of Scoby that was big enough to easily stretch over the life-sized hoops I had commissioned in the spring: 2.5 x 1.5 meters. I had to go over the drawings and wood sizes and lengths over and over again. It took three separate tries before my order for the pond liner that I used to line the tank went through and then when it finally arrived I spent an entire day washing and scrubbing the dust off of it. The act of constructing the tank itself, with help, took days of monotonous sawing, drilling and connecting.

I write prayers for growth and healing on the wood of the tank that sits underneath the liner.

And then there was the tea.

I'm about to start recording to fill the tank and before I do that I was going to put my phone on airplane mode, and I had to have a conversation in my head, using my body compass, which I do ALL the time when I have to shut down my phone, I have to ask... is it safe to shut down my phone? If I turn it off, and do something fun and go offline am I going to turn it on and find out that in the meantime Max got in an accident on his way to his parents house or something like that. Maybe it has to do with coming back from vacation, and finding out that Luke was dead. I don't know... And I have to ask my body compass, is it safe? YES. Will he get in an accident? NO. So, I have that conversation all the time with myself.²¹⁴

It was an entire day of boiling water to make 5 pots of super concentrated (8x) tea sweetened with a total of 12.9 kg sugar. The next day, it took over 4 hours to dilute the tea in the tank with liter by liter of cold tap water until the tank was filled with 352 liters of liquid. Also mixed in were 33.12 liters of starter tea from an old Kombucha batch, about 12 mother (and grandmother) Scobys to get the fermentation started, and a couple extra cups of table vinegar for good measure, to ensure the proper PH for optimal bacteria growth conditions.

Will this be too heavy? Will the floor crack and crumble and fall down? Would the very project that I made to talk about healing trauma bring on its very own version of the collapsed building?²¹⁵

In the end, the tank held over 385 liters of sugary black tea.

Scoby tank is finished. It was a wild ride. I went through moments of terror, feeling like maybe this was too much weight for the floor, and everything would collapse. Maybe it would leak. Is it

214 Voice recording, 23/08/2020.

215 Voice recording, 23/08/2020.

too much? Can I finish it? I kept going through scenarios in my head that would also make that much weight on these old floors... It's fine. It's fine. But it was really a trip. I got into a trance state a little bit with filling up the water. My hands started cramping on the last one where I needed 105 liters of water, so I had to keep switching hands, but eventually I pushed through the pain and finished. Which was awesome... And now I'm done. I need to cover it up, and I need to mop.²¹⁶

I checked on the tank daily, watching as the first few small bubbles appeared on the surface and under the mother Scobys, and then as day by day the surface of the tea thickened.

As I waited for the Scoby to thicken, I began to make embroidery tests on smaller Scobys, first with hair and then with cotton thread. The stitches, supple and not pulled tight against the fabric, reminded me of my fascia studies. The sound of the needle piercing the Scoby and then running through is soothing.

When I harvest the test Scobys I have to pull the mother Scobys off of them and leave them in the tanks so they can continue to ferment new Scobys. In doing so, there are holes made in the baby Scoby, and that's what I'm stitching now. I'm healing the mother wound of the Scoby. I'm stitching it together and around it to hold it together and reinforce the skin. The original trauma of humans is being ripped from our mother's womb into this crazy world.²¹⁷

216 Voice recording, 23/08/2020.

217 Voice recording, 14/11/2020



Scoby tank, finally filled, 23 August, 2020

After four weeks of brewing, the Scoby was about 3mm thick. It looked like a primordial pond, frozen over and preserved in time. The mother and grandmother Scobys were hanging completely still in the liquid, and attached at points to the new Scoby, which held its shape when lifted with the tip of a butter knife. It was ready to harvest.

I removed the cloth covers and wooden supports from the tank, sanitized my hands and arms thoroughly, set up my cameras and my collection bin, and took several very deep breaths to try to calm my nerves and beating heart. I had no idea what a Scoby of this size would feel like or weigh. Would it tear when I took it out?

I gingerly grabbed one of the corners of the Scoby and began to pull. As I did so, it easily slid over the liquid underneath it as I gathered it all into the corner of the tank. I knew from my previous tests that it would not stick to itself even if collected into a bundle. It was so heavy and slippery that it took great effort to get it out of the tank and into the collection bin—I had to slip it over the edge of the tank, and then pull it hand over hand into the bin, stopping a few times to pull a few of the mother Scobys off so that they could remain in the tank to grow the next one.

Once in the collection bin, the Scoby looked alive, like something removed from one's insides, like a placenta. I felt an affinity for it and was in awe of its consistency and presence.

I had to call for reinforcements for the next step, as it was impossible for me to complete on my own. Namely, I had to first submerge the Scoby in cold water and wash it thoroughly with dish soap in order to neutralize the growth of the bacteria.

Then I had to rinse it off, a task that turned into a hilarious and labor-intensive dance in a standing shower of water, plus three pots and four hands. Although the material wasn't tearing due to handling, it did tear several times as a result of water forming in pools in its creases as we transferred it from one pot to another in an attempt to rinse off the soap.

Once rinsed, it was time to impregnate the Scoby with melted coconut oil in order to make it less vulnerable to moisture. We laid down a tarp on my studio floor and then, hand-over-hand, pulled the giant, wet, slippery Scoby out of the pot and onto the floor. Slowly we were able to stretch it out to its full, flat size, and using our hands we massaged the oil into one side, then flipped it over to oil the other.

Once oiled, it was time to mount the Scoby to dry. I knew the Scoby would be too delicate at that size to stretch and dry on its own, so I had sourced a bandage-like material called Milano fabric. It is a light material, very soft, and is typically used to restore paintings.

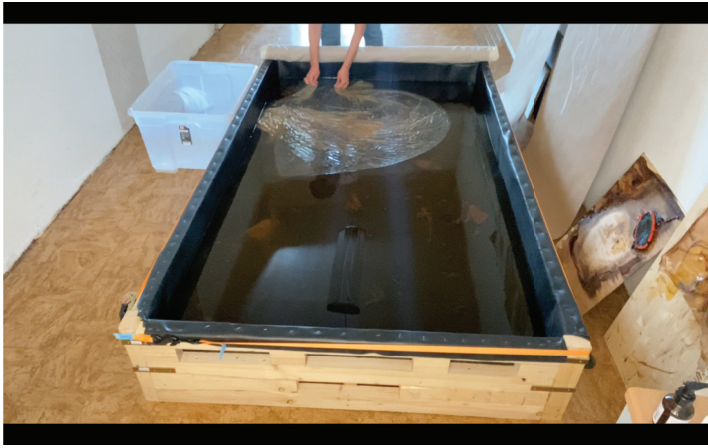
We laid the drying rack I built over the Scoby tank, covered it with another large tarp, and then laid out the Milano on top of that. We rolled the Scoby onto the long paper dowel that the Milano fabric had come on, positioned it in the center of the fabric, and then slowly rolled the Scoby out flat.

The next day, I poured another five liters of sugary water into the tank so that the next Scoby could dry.



Harvested Scoby





Harvesting Scoby, 26 September, 2020



Final dried Soby, 2.5 x 1.5 m, on Milano fabric

I had no idea when I started this process that the act of making the kombucha would also end up being a rhythmic, body-based practice, or that the giant dried Scoby would remind me in equal parts of the backs of my grandmother's hands and a shroud-of-Turin-style relic. It pulled in all of the themes of this paper: connective tissue, epigenetics, rhythmic artistic practices, and time. It became unnecessary to embroider on the life-sized Scoby: the act of making it, in and of itself, was a rhythmic, somatic practice which I used to self-soothe.

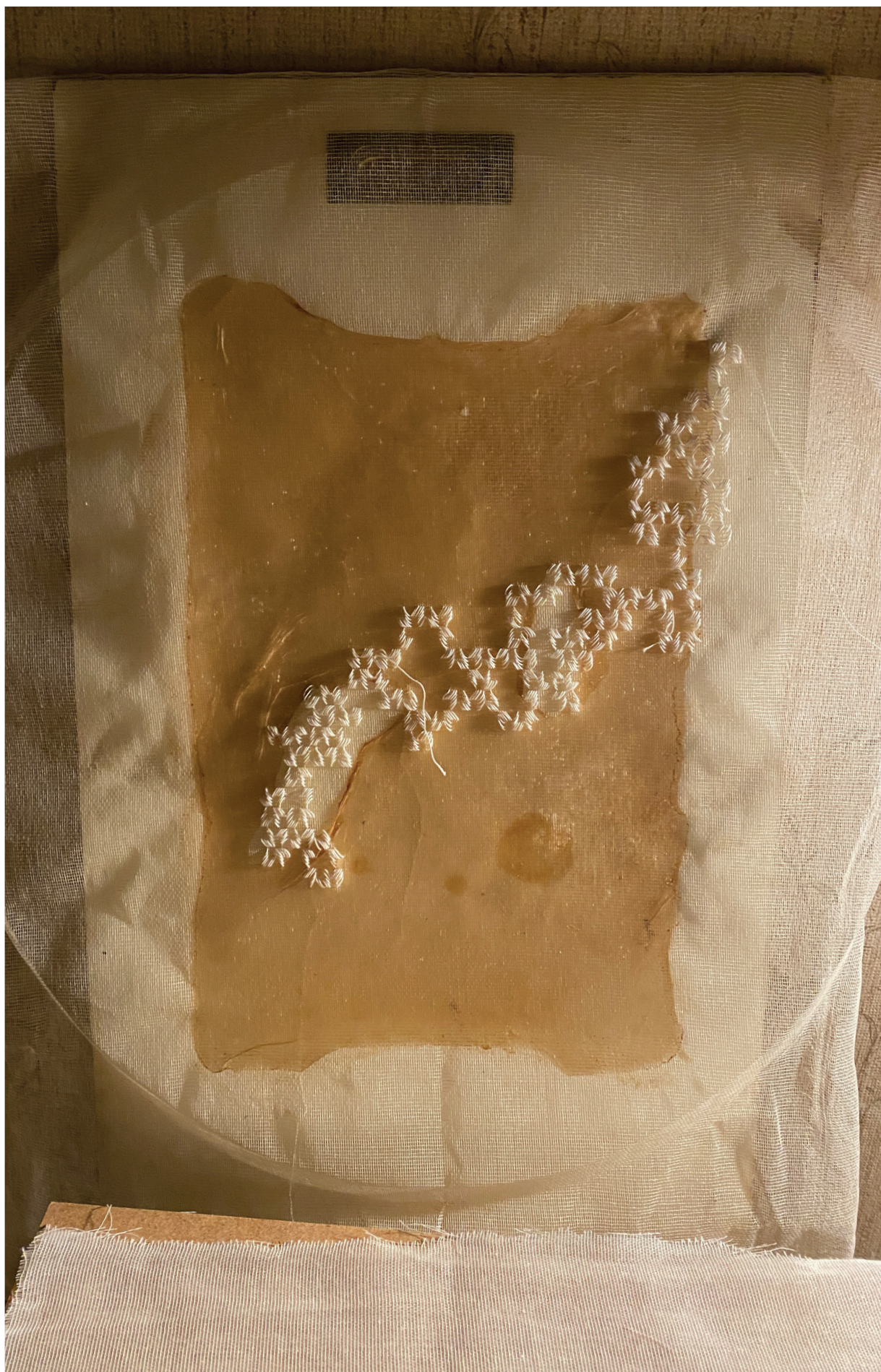
As the Scoby dried, it began to develop darker beige spots and pink spots and rings, especially around the few mother Scobys I had left attached, as if they were blooming, bleeding or soaking into their offspring. I noticed days later, that there was a grandmother Scoby attached to one of the larger mother Scobys—the lineage of genetics of the piece beautifully and explicitly in-play.

The piece is my body proxy. I'm not using a hoop anymore and I'm getting so exposed to the bacteria of this thing by working with it. How much has my body chemistry and my microbiome changed based on the sheer amount of exposure I've had to this Scoby?²¹⁸

218 Voice recording, 22/10/2020



Grandmother, mother and baby Scoby.



Work in process, November, 2020

EPILOGUE | August 5, 2020

"If we want to understand our consciousness—our subjectivity—then we must put aside our prejudices and transcend certain boundaries of our own creation."²¹⁹

Working on this thesis has been an act of healing and triggering in its own right. To read and learn and lean into the study of what has and is happening in my brain due to trauma, to find vocabulary for what has always been a private and lonely struggle. To learn new techniques for coping and to *finally feel normal rather than guilty* in the way trauma has shaped my life has been a major journey.

It certainly helps on a day like today.

Last night 1275 tonnes of calcium nitrate exploded in the port of Beirut (a city already rocked by exponential inflation, corrupt government, and infectious disease) killing 60 (that's the count right now) and wounding thousands. The family of dear friends live there (thankfully they are all OK). I spent two beautiful weeks there in the summer of 2003 with my college roommate and her loving family. It is so far away and yet it feels so close to home.

It plugs directly into the storyline that is repeated throughout all my trauma: *out of nowhere comes death and chaos when you're least expecting it*. I feel traumatized this morning again, my heart is beating, I feel close to tears, I reach out to friends also affected, trying somehow to find connection as solace for a trauma that is "not even mine". But the rumble of falling buildings and echoes of breaking glass, the dust filled skies, the ghostly shapes walking out from the rubble all poke that soft spot in my memory bank that brings my physiology right back to that day on that hill in K.L. in 1995, and I can't stop thinking about the families that didn't get to say goodbye to their loved ones.

That's how trauma works—we are triggered by things that are not the things that traumatized us in the first place. Our bodies don't know the difference because our lizard brains immediately equate this new trigger with the old one and put our stress response into alert mode.

So this morning, I pet my new kitten, I kissed my partner, I thanked the universe for my health and my wealth and my home, and I sat down to stitch.

I always wonder what healing really looks like—in body, in spirit. I'm attracted to the idea that the mind, the soul, can heal as neatly as bones. That if they were properly set for a given period of time, they will regain their original strength. Healing is not that simple. It never is.²²⁰

219 Wittmann, *Altered States of Consciousness: Experiences out of Time and Self*. Cambridge, 122.

220 Gay, *Hunger: A Memoir of (My) Body*, 283.

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