

Grey Areas

He brought it to class in a white plastic bucket, just like the kind my mom used to fill with soapy water to wash the car. It is my first time seeing a real, live (well, dead, technically) human brain. Our class of characteristically analytical grad students try to hide our smiles of anticipation and remain composed while he pulls it out, cerebellum dangling below his hands, and puts it on the table.

The moment of seeing a human brain for the first time is not how I pictured - there are no white lab coats, and we aren't surrounded by test tubes and jars of preserved bugs and animal parts. It just sits on a cookie sheet as the paper towels underneath slowly soak up the formaldehyde falling off its glistening surface in drips. It's strange to such an official-seeming object resting beside commonplace kitchen items. It's smaller than I thought it would be and looks like something from the exotic meats section of a butcher's counter. "Alright," our professor announces, "here's what you've all been waiting for." We all hover around the table in this windowless, basement classroom, eyes watering from the preservation chemicals, and attempt to locate and map the structures we have spent the past few weeks memorizing.

In these informal surroundings, my mindset of scientific objectivity fades out at times, giving way to more casual questions and associations. Why is it called grey matter if it looks more of a sandy pink color? I think about the times as a kid I tried to look through my older sister Larissa's eyes to searching for the answer of what behind them made her different from me. She was born premature, with a host of developmental problems. My parents didn't realize the extent of her handicap until I, 15 months younger, began to develop faster. And then came the seizures, which in their frequency reversed much of her responsiveness and all of her self-sufficiency. She could not walk, or feed herself, and the few signs of communication she exhibited included winces when my mom tried to brush her hair and laughter when cartoons were on TV. There wasn't a label for her disorder, just a set of symptoms and unknown causes. Her condition was a mystery to everyone and since she couldn't talk, so were the contents of her mind. We still don't know and thinking about it continues to incite the fierce curiosity that led me to study the brain.

"Ok, I'm going to get more paper towels, why don't you guys pull off the pia and pull out the arteries. Everyone have gloves?" the professor instructs, unphased as he plops the box of gloves on the table. It's time to clean the brain. A thin stretchy placenta-like protective layer covers the brain's surface. I'm apprehensive about touching it; the "that's a dead person's brain!" and "this thing is so amazing" thoughts conflict. Sarah, my Nordicly tall clinical psych classmate takes the lead. "Weird. The arteries are stretchy." A few of us cautiously prepare to follow. "They break easily so don't pull too hard" she advises. Alert from first timer's adrenaline, I feel my heart beating in my chest as I extend a gloved hand and touch it for the first time.

As I brush my hand over its surface, my mind filing through old memories trying to figure out what these dense, wrinkly folds of grey matter remind me of. Maybe a cooked Portobello mushroom or a stiff scallop? In high school, I would have been morally opposed to dissecting a frog but here I am, looking at a cadaver's brain on a cookie sheet as my professor pokes it with a rusting kitchen knife. How do our thoughts come from this?! I don't know if it is the familiarity of the kitchen tools he uses contrasted with the jarring nature of seeing and touching a dead person's body part, but today I feel like I am at the boundary line of morality - it is unsettling to slice apart something that once had so much value. Where did the "person" go from this part? A few of us take turns pulling off the stretchy covering. We have to reach our fingers deep into the smooth crevices of the wrinkles to pull out the arteries, the brain's former life source.

"Rebecca, show me where the precentral sulcus is." I point a gloved finger to the ridge. "Good," my professor says quickly, "it will look different in every brain and it's not always easy to find." He redirects his attention. "Derrick, is the motor strip or somatosensory strip in front of or behind the precentral sulcus?" Following more questions and explanations, the professor makes the first slice

down the middle of the brain hemisphere. This reveals a set of smooth structures, a landscape entirely different from its wrinkly surface. Hidden here inside the brain is where the amygdala and hippocampus, areas associated with emotion reside. How is it that our thoughts and feelings relate to the geography of the brain? How is this mass of tissue the source of our consciousness, our chaos, and our creativity?

My perception of the differences between my sister and I, and the nature of my questions about her, changed as I grew. At 4, vexed when she won't hand me her toy I think, why can't she play right? At 10 my mom tells me to hold her hand during one of her seizures. Does it hurt her? Is she aware of what's going on? As a teenager, I argue at the not-fairness of it all, "Maybe she doesn't want to take a nap right now, Mom. You can't just make her do stuff without trying to figure out if that's what she wants!" What *does* she want and how do we figure it out? What if she is a normal thinking person trapped inside a broken body and we are missing the cues she is using to try and communicate with us? I think of Anne Sullivan with Helen Keller and wonder if we just aren't trying hard enough. At 21, home from college on winter break. I kneel down to get eye level with her in her wheel chair. I look her in the eye and say hi in the excited, lightened tone normally reserved for children. She smiles back. I ask her how she's doing. She still smiles and her eyes wander. What is she thinking? How do you continue to engage with someone who can't respond back? Now at 28, I can name parts of the brain in hundreds and provide theories of the hows, wheres and whens of its input and output, but I still can't ask my sister how she feels and what she is thinking; I still don't really know.

"Use the ventricles to find your way," my professor instructs, pointing to the large holes in the center of the brain. When alive, these deep, giant holes are filled with fluid, like underground lakes. I wonder what my sister's ventricles look like and if my dad got it right when he told me the neurologist said hers were enlarged. Large lakes in an already small brain do not leave much room for land. Maybe this is a cause of her seizures; could these electrical storms in her head, be the product of a struggle for cortical territory? When I think about this, I am a little relieved – it seems more clear now that she isn't like me but trapped in a body that won't listen.

From different angles and vantage points we can inspect patterns of human life and yet never be completely certain about how we got here - looking through the lens of a geographer yields some clues, and thinking like a historian or scientist provides others. These frameworks still don't quite answer the haunting questions for me like what is my sister's life like in her mind, or even larger questions like what happens to our identity and sense of self, when we die? At this stage in my own development I believe the brain is a significant clue, and so I study this object with the hopes that I can come a little closer to finding out where our elusive "self" resides. And just as with any other form of learning, we break it apart and analyze it in slices in an attempt to understand.