

L'Hôpital's Rule; or, Oblivions

Algebraic slope, defined as $y_1 - y_2 / x_1 - x_2$, describes the average rate of change over a finite area. However, taking the limit of two points getting infinitely close to each other—

$\lim_{h \rightarrow 0} \frac{f(x+h) - f(x)}{h}$ —produces either a constant or an expression representing an instantaneous

rate of change that holds true for the entire function. This is where derivatives come from: the tendency towards oblivion. Discovering what remains as limits are reached and patterns are rewritten in terms of zero and infinity, everything familiar redefined beyond recognition. I understood this somewhere in the skin of my teeth and the crevices of my palm before I could even speak fluent English. I first started to think that my body wasn't mine when I was eight years old in a Beijing college dorm.

My mother, her parents, and my sister lived together in a one-bedroom apartment provided by the university at which my mother was a professor. My lao lao¹, a retired math teacher, would watch the same TV program every week before dinner. Despite the health show being mainly aimed at elders, I'd memorized the preceding liquor and children's medicine ads. But that day, the show introduced a patient who was born with her legs fused together.

Aiya, the young makeupted host gasped. *How does she—how did she live?* she corrected, noting that the toddler in the purposefully horrible photograph had *been* alive. *Surgeries*, a guest doctor pronounced eagerly, rubbing his hands together. *So many knives and stitches. But she'll always just be a lump of flesh from the waist down—*

¹ "Maternal grandmother" in (Beijing/Northern dialect) Mandarin

Six months later, my grandparents found me hunched over the cold metal bed frame at the dead of the night, compulsively spitting saliva into a corner of the makeshift mattress made from blankets layered on bubble wrap. This was because I knew that my body could kill me.

我要抽你、敲你! *I'll whip you! I'll knock your head in!* My grandfather used to scream whenever I made a mistake. That day, however, the utter incomprehensibility of my neurosis earned me a trip to the doctor, who, just as befuddled, prescribed a box of the very same children's medicine advertised before the health show.

Within three years my lao ye² died of lung cancer. My mother said, *I can't tell my 90-year-old grandfather back in China. He'd die of heartbreak.* In the oblivion of my mind, my tai lao ye³ still believes in a man who doesn't exist.

Derivatives are also a way of losing information—reducing the x-y position of a function to its instantaneous slope. I wonder if—I *hope*—that like calculus, writing creative nonfiction is perhaps more about significance than memory, significance derived from forgetting, because years later I don't remember anything about Beijing except that my lao ye would smoke at the one window down our hallway, that I never finished that box of children's medicine, that I would rather have shut up and gone to school with a 40°C-degree fever than complain. That when everything was dying, perhaps nothing else mattered. In other words, I am a coward.

All I really have of Beijing now is a small, powder-pink album of washed-out photographs falling apart at its binding. In each picture, I am smiling blankly in all directions, the flesh of my 4'11" stature flattened into impersonal pixels. But photos, like derivatives, exchange experience for appearance, and years after I moved back to the American Midwest, I continued

² “Maternal grandfather” in (Beijing/Northern dialect) Mandarin

³ “Maternal great-grandfather” in (Beijing/Northern dialect) Mandarin

to believe in what doesn't exist. I continued to know that my body was not mine. Laying in my bed—the walls the same watered-down pink as that dying album—feeling pinpricks of invisible hands and an invisible gaze crawling through the suffocating suburban darkness, I gathered proof of reason like shredded remnants of two disparate photos I needed to piece into one. But nearing the very edges of oblivion—the days when I spent hours staring at the ceiling, trying to sew explanations from impossible logic, from the thoughts so strong I could barely breathe—I knew, solemnly and secretly, that at the extreme periphery of my perception, the worst of what I believed in had to be as real as the fear it caused.

Not all limits immediately make sense. When $\lim_{x \rightarrow c} \frac{f(x)}{g(x)}$ reduces to $\frac{0}{0}$ —considered an “indeterminate form”—the derivative is unfinished. In this case, L'Hôpital's Rule stipulates that taking the derivative of $f(x)$ and $g(x)$ — $\lim_{x \rightarrow c} \frac{f'(x)}{g'(x)}$ —will result in the true limit; that is, forcing together the photograph, removing information until the bigger picture is something mathematically acceptable. Computable—tolerable—only at the end of it all.

Some limits will always be reached. If not now, then eventually.

There's one oblivion I imagine so often it has become almost memory. In it, I am still a coward, but I am a saint instead of a girl. Maybe it's 2019 this time. Let's say, November. The Navy Pier. A weekend trip. Let's say, the Lake Michigan breeze through the driver's window. Limit as x goes towards infinity: oily smoke sighing from the squeal of metal against metal railing. Everything I ever knew about myself would be true, and nothing about that would matter as the sun met its watery, red-ringed reflection at the shoreline: $\frac{0}{0}$.