

## Dimensionality Curses

*Emma Stamm*

I remember him with a stargazer lily in his hand and I remember his mania. The lily was for a photoshoot. His cheekbones made all the students jealous. He was the most popular model in his darkroom class.

His manic qualities I sensed the first time we talked, confirmed it with a search conducted rather guiltily using the privacy feature on my web browser. The first result was a mugshot: undeniably him, although his normally close-cut blonde hair reached his shoulders and his expression was more serene than I'd ever seen in real life. According to one article he was arrested for holding up a convenience store in Anaheim, California. It said his mother had paid the bail, which was exorbitantly high, and that he'd stopped taking his antipsychotics six days earlier. Later he'd tell me bail is never really as high as they post and he never took any medication in his life. I didn't believe him then, but I do now.

He was my student. Well, I was the teaching assistant in

his abnormal psychology class. But I lead the class half the time, and he called me professor despite my exhortations to leave it at “Emma.” I wondered if he was one of those kids who gets into psych as a form of self-therapy, but, no, his major was computer science. Once he made a joke about passing with a C++. I get it now.

After the semester was over, we kept hanging out. He didn’t go home for the holidays. His dad had just moved the family from San Luis Obispo to Seattle, and he said he was happier staying in Nevada since they were far away. At the end of December we traveled to Las Vegas. The strip was cold and tranquil on Christmas morning. We fell asleep on each others’ shoulders on the bus ride home.

We lost touch in the spring, didn’t talk for almost two years. One day I ran into him at the library. I asked him where he’d gone, having assumed he’d moved away without saying goodbye. No, he’d been at the university consistently, we just kept missing each other. He described his thesis, a project in experimental machine learning. The idea was to propose a new theory of what he called “ontological code replication.” He showed me the opening of his paper, not yet sent to his advisors, but “an example of ironclad logic, and an homage to purity.” His words, not mine.

LOCKWOOD COLLEGE

# Dimensionality Curses: A Theory of Replication

A THESIS

PROPOSED TO THE DEPARTMENT OF COMPUTER SCIENCE  
IN PARTIAL COMPLETION OF THE DEGREE

Master's of Science in Experimental Computation

By

Michael Miller

## **Abstract**

In data science, the dimension of a data set can be used to express its complexity.

Models of human behavior might include gender, age, race, and so on, as independent parameters. The more parameters that feed into the model, the higher the dimension of its corresponding data-space.

High-dimensional data is more difficult to process by machine learning algorithms, because an increase in dimension causes an exponential, rather than linear, expansion of computational complexity. This is known by programmers as the “curse of dimensionality.” Hence the project title.

In information theory, an “ontology” is an attempt to systematically formalize constellations of meaning,

theory, and representation which emerge from specific knowledge-spaces. Just as with philosophy, ontology in the information-science usage refers to the nomothetic representation of ideas, phenomena, and relations, along with all their interdependent properties, according to a system of categories.

As with ontology, I argue that data dimensionality is not as distinct from dimensionality as philosophers use the phrase. In particular, theorist Herbert Marcuse's treatment of "dimensionality" shares an ontological archaeology with the "dimensionality" as understood by computer programmers.

Dimensional reduction, a necessary means by which a computer "learns," gives way to greater capacity for digital reproduction. Replication vis-à-vis code, data and infrastructure. But certain features are lost when phenomena are dimensionally homogenized to make the machine "know" and "learn." I submit that these qualities are similar to the dimensions whose mourning as casualties of political economy facilitated canons of twentieth century philosophy, including that of Herbert Marcuse and his esteemed peers.

This loss of human dimensionality is deeply regrettable. To short-circuit some potential future harm, I intend to propose a new mode of algorithmic development which rescues the qualitative dynamics of high dimensions, rendering them losslessly effable, (that is to say, readable) in data and iterable (that is to say, replicable) in code. This has staggering implications for the replication of mentality in artificial intelligence, and could be thought as a non-instrumental alternative for the abiotic genesis of human consciousness in machine life. Not human-like, human, the affective interiorities of the species-being of Man Himself.

I could barely suppress my laughter. There was Michael Miller, so smart and so strange, somehow having made it into graduate school while failing to understand he was a weirdo philosopher at heart, not a programmer. I told him this read like a humanities paper, and not a particularly good one at that. He replied that it could be proven, that it was bona fide science and it was way over my head. Then he snatched the paper out of my hand.

We didn't discuss the topic much after. But our affinity for one another wasn't hurt; if anything, we grew closer after that night. One day it dawned on me that we would never happen in the way I thought I wanted, but we could become best friends.

Often we talked about warming sea currents and the signs of the apocalypse. The weather had ceased to abide by the rules of any season; we'd learned to keep boots and umbrellas at the ready, since rapid-onset thunderstorms were a possibility year-round. Not long ago our district had denied asylum to refugees fleeing ecological disaster. Decline in other senses, too. Disposable society, cynicism, a disintegrating economy. Late at night we'd chat beneath the slender antidepressant lamp in my living room. One day he confessed that, during our two years of mutual silence, he had indeed left the area. He'd spent a lot of time in Kenya. By then I liked him so much that I didn't want to remember he had a past.

He said he bought a neoprene vest in Nairobi. I was miserably curious. He told me about a hacker's club downtown where he'd learned to sculpt with digital vectors to mimic high dimensions. He told me about tech-wise city kids and the smarts required to build gaming machines from local trash. It wasn't a monologue for my taste. I wanted him to fix up the neon signs he'd scavenged to adorn my apart-

ment, to crawl across my lightless bedroom and crumple into sleep. My fondness for him should be a narcotic.

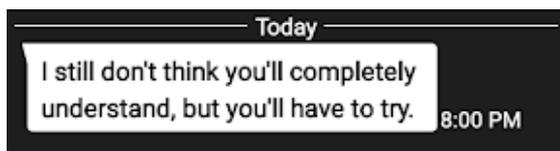
Once I thought to ask him what he saw in Kenya that was so bad it fixed his mind on the end times. What line of reasoning made him return to the United States, where he welcomed me as his sidekick while shunning everybody else. He said he couldn't write a thesis as a nomad. He was okay with breaking ties with friends and family, he had no reservations about lying. He had no interest in making friends or professional connections. All he wanted was to work with as few interruptions as possible.

He always stayed up later than me. Sometimes the sun would wake me up and I'd find him staring at it. He said he liked dawn better than dusk, that he didn't think sunsets were pretty because they were made out of pollution. Once I tried, pathetically, to suggest I had more interesting dreams than him. I just wanted to be the object of his mind, sharp and bright as lacquer, I wanted it to reflect me. But he was only interested in high and transhuman dimensions, the grail of his digital replication methods. I never heard about ex-girlfriends or buddies from the past.

We spent a lot of time discussing the psychology of industry and economy. All the time he said he hated that humans forced each other to work, but he was unnervingly productive. Halfway through the semester he told me to leave him alone so he could focus on his work. One day I realized three whole weeks had passed since we communicated. I tried to bracket my sadness, or at least use it as fodder for my own research. There was no point trying not to think about him.

Two more weeks and a text message came in. He said

he'd made a breakthrough and he wanted to show me. You might get it now, he said, you might understand. I said I'd be right over, but he replied that I'd have to wait at least one week. That was fine, of course. I had endless patience for him.



Tuesday, 8PM. He'd asked me to bring whiskey.

I could see how much work he'd put in, but none of it made any sense to me. He showed me complex file paths, walls of code, separate monitors running terminal windows in shades of black and green. He also revealed a home server full of data. He squatted before it, ran his slim fingers over the dustless surface. "It's full of human ontological dimensions," he said. I translated it in a way I thought would please him. "You mean high fidelity data about lots of people." He shook his head. "It's not high fidelity, there is no fidelity. This is the original as much as that term makes ontological sense, Emma. It's original the way you and I use it."

He sounded like a lawyer utterly convinced of his clients' innocence, annoyed at having to show up in court. And there I was with my inferior mind, mutely confirming his genius. It occurred to me that my understanding was not the point. Perceptive as he was, he failed to realize I couldn't fill my role. I was a lousy mirror, an increasingly useless accomplice.

I offered a few niceties. Happy Holidays, best wishes for his studies, and left into a desert snowstorm. That was the last time I saw him.

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In six days a missing persons' report went out. He'd been last seen on November 30. Three days after our last meeting. They sent search parties. A body was recovered from the lake not long after the new year's, on the 5th I think.

It was unclear whether he drowned or committed suicide. His mother maintained the latter, but it could barely compute for me. Not for someone who felt more vital than anyone else I ever knew, someone who — yes — understood the conditions of mass extinction better than anyone I'd ever met, but who seemed paradoxically more alive for it. Michael Miller had a purpose. He was aware of all his reasons for sticking around. He was more convinced of the worth of his life than anybody else I'd ever met.

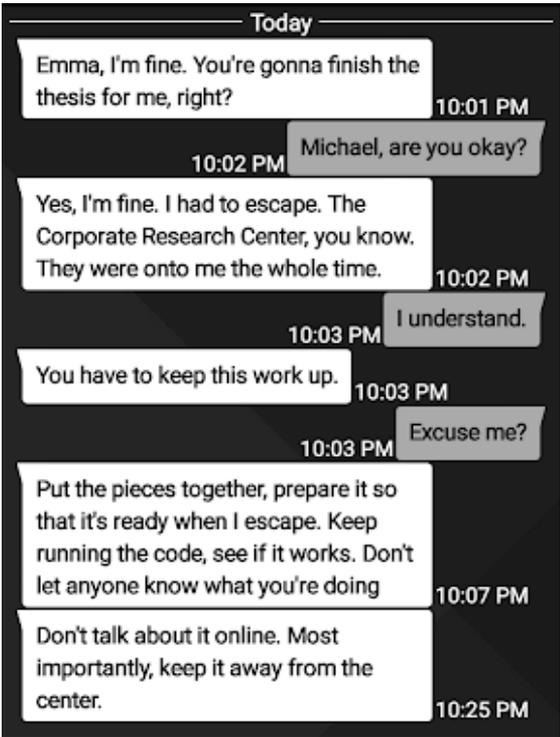
A report said the resemblance of the corpse was undeniable. Arrangements were made for a funeral. But before the results of the DNA test came back, the body was found to match that of a man gone missing from Ithaca, New York, a certain Nicholas Fields. That was on the 8th. I got the notice around 1PM.

At 2, I learned the DNA also matched that of a Roman G.S. (I never learned what the initials stood for). Born and raised in Oklahoma, missing for roughly four months. The investigators were dumbfounded. The parents of Nicholas Fields had already spread the word.

As it turned out, the body was not a fit for Michael.

The Fields family visited Nevada to scatter something burnt over the red rocks. They met with Michael’s mom, where (she would later tell me) they spoke gently of how hard it is when a son goes missing. She maintained that it was suicide.

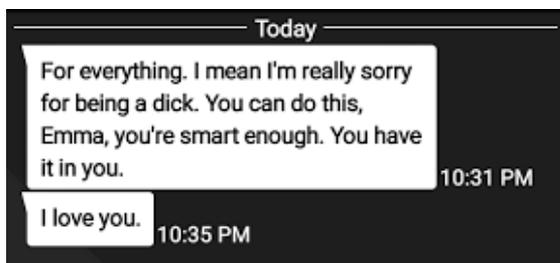
On the last day of the month, a text message came in.



I told him I didn’t know how to code. I asked him where he was and what this was all about.

He said all the programming was done, that the work was

to write up the reports. I have some books that can assist you, he told me, and soon I'd receive the keys to his apartment. He didn't disclose his location. He promised he'd return as soon as he could and offered an apology.



Tears distorted the screen of my phone.

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That was three months ago. After an excessive winter, the spring has arrived.

I've been developing his thesis. He told me not to talk with his former advisors and to make sure the computer I use isn't connected to the internet. Last week another match for the DNA came up: someone named Pete, a local, actually. Michael said to forget about the DNA tests and the rest of the investigations, and that under no conditions should I contact his family. His mother, of course, resigned herself almost immediately, but her depression hasn't lifted. I think it started long before the so-called suicide.

As for me, I've never known so much peace. I took up residence in his apartment, gave up my own degree. Sometimes I think I see undercover agents outside my window. But I've got too much common sense. The ease

with which I sleep at night serves me well. Now I get why he liked me — we were yin and yang. Are.

Very few people have noticed my withdrawal. There's a way that anonymity can feel like magic. I think I caught a touch of his mania. He'd always said his vision would spread person-by-person, not through mass publicity.

These days I feel a new woman growing inside of me. I write and write, I pull a new mind out of my words.