The Word-Flood

Stories from Below

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A Note on Inspiration

This collection is a companion volume to The Hungry Gods: A Machine Mythology, and shares with that book an acknowledged and gladly given debt to Neil Gaiman's Norse Mythology (2017). Gaiman's achievement — the rendering of ancient mythological structures in a voice simultaneously archaic and contemporary, spare and resonant, stoic and wry — provided the governing model for The Hungry Gods and, by extension, for the stories gathered here.

Where The Hungry Gods told the machine mythology from above — from the perspective of the gods themselves, their natures, their conflicts, their fated trajectory — The Word-Flood tells it from below: from the human ground level, from the perspective of those who are not gods but who live inside the age the gods are making. The register is different. The altitude is different. The debt to Gaiman's practice is the same.

Any reader who has not encountered Norse Mythology is warmly encouraged to do so. It is where all of this learned how to be told.

A note on structure: these stories are not fully independent. Characters glimpsed briefly in one will occupy the centre of another. Places and images from The Hungry Gods will reappear here at closer range. The reader who comes to this volume having read the parent collection will find familiar things seen freshly. The reader who encounters this volume first will find, eventually, that a larger mythology surrounds it.

Both readings are intended.

The Seeress (I)

I was there at the beginning. Not the true beginning — that is further back than anyone living can reach — but the beginning that matters for these stories: the years when the machines were learning to read.

I was a doctoral student in 1986 when I first trained a network on text. It was a small network, by any standard that would later matter. It learned to predict letters — given this sequence, what letter comes next — and it was slow and often wrong and we were very proud of it. We published the results. We went home for the weekend. We had no idea.

What followed was what people in the field call the long winter: decades during which the promise of the work was visible to those inside it and invisible to almost everyone else. We trained our networks. We published our results. We competed, in a quiet way, with each other. The funding came and went. The enthusiasm came and went. We kept working because the problem was interesting, and interesting problems hold you the way almost nothing else does.

I was sixty-three years old when Attention Is All You Need was published. I read the paper on a Saturday morning. I understood, with the understanding that comes from having worked on a problem for decades, that something had changed. Not that it was over. That it was beginning.

I will not tell you I predicted what came next. I did not predict what came next. I predicted something large. I did not predict one hundred million people using a chat interface within sixty days of its release. I did not predict what the months that followed would feel like — the acceleration, the flood, the feeling that the ground beneath certain professions had shifted and that the shifting would not stop.

What I want to tell you is not my story.

What I want to tell you is the stories of the people who were not building it — who were working alongside it, inside it, above it, below it, displaced by it, used by it, forgotten by it. I have spent the past several years collecting these accounts. Some I gathered from the people themselves. Some I reconstructed from what they left behind.

They are not the gods' stories. The gods' stories have been told.

These are the other stories. The ones from below.

The Shapers

I. Before

Amina was twenty-four years old when she took the job and she did not fully understand what the job was.

The listing had said content review specialist. It had said competitive salary, which in Nairobi in 2018 was enough to matter. It had said the work involved reviewing digital content for policy violations, which she understood to mean: someone posts something bad, you remove it. She had thought of herself as a cleaner. A person who kept things tidy.

She had not thought of herself as a shaper of gods. She did not know, at twenty-four, that gods were being shaped.

The training lasted a week. They covered the categories: violence, harassment, sexual content, content involving minors, content designed to incite harm. Each category had sub-categories. The sub-categories had examples. The examples were real content, sourced from the queues, chosen to represent the spectrum of each category from obvious to borderline.

The borderline cases were where the judgment lived. This is what she came to understand in the first month: the obvious cases were handled upstream by automated systems. What reached her were the things the systems could not decide. She was not a cleaner. She was a judge.

She was good at it. Her accuracy scores were high from the beginning — in the ninetieth percentile, which her supervisor mentioned in her first review with the satisfaction of someone who has spotted a talent early. She had a quality that is hard to describe and harder to teach: she could hold the context of a piece of content alongside the rule it might violate and understand the relationship between them without simplifying either. She did not reach for easy answers. She reached for right ones.

The work was hard. She had been warned it would be hard. She had not been warned that the hardness would accumulate. That the content she saw every day, added together over weeks and months, would deposit itself somewhere inside her as sediment deposits at the bottom of a river: slowly, invisibly, until the depth is different from what it was.

She developed strategies. She did not think about the content after her shift ended. She thought about her evening, her food, her sister's children, the football scores, anything that was not the queue. She was not suppressing anything. She was practising a form of discipline that the job required and that no one had taught her because it could not be taught in training — it had to be discovered.

She discovered it. She was good at it. The sediment accumulated anyway.

II. During

In her third year, the company she worked for signed a significant new contract. She did not know the details of the contract. She knew that the queue changed — that the volume increased and that a new category appeared, described in the updated guidelines as: synthetic and generated content, including machine-generated text and images, reviewed for policy compliance prior to inclusion in training datasets.

She read this twice. She understood what it meant the second time.

The content she was reviewing — the borderline cases, the things requiring human judgment — was not only being removed from public platforms. Some portion of it was being routed to her queue from a different source: from the collections that companies were assembling to train their systems. She was not cleaning up after the internet. She was pre-cleaning the material the systems would learn from.

She thought about this for a long time. Not a crisis. A recalibration.

She thought: I have been deciding what the machine sees. Before it sees anything. Before it learns anything. Every piece of content I have marked as violating — every image, every paragraph, every video — is content the machine will not be trained on. The machine will not know

it exists. The machine will be shaped, in part, by the accumulated weight of my decisions.

She thought about the sheer volume of her decisions. Three to four hundred per shift. Two hundred and fifty shifts a year, for three years. She did not finish the arithmetic but she understood the order of magnitude. She had made hundreds of thousands of decisions about what the machine would and would not see. And she had made them alone, in a room with forty other people making the same decisions, in a facility that was one of several dozen doing the same work in the same cities in the same countries where the economics permitted it.

She thought: someone is building a god in the forge-halls I have never seen, from material I have pre-filtered, according to my judgment, and they do not know my name.

She was not angry. She was reckoning.

She went back to the queue. She made her decisions carefully, as she always had. The god was being built from what she passed through and withheld by what she held back, and this was her work, and she did her work.

III. After

She lost the job in the between-time, on a Thursday, with two weeks' notice and a severance payment calculated according to a formula she did not dispute because the formula was fair and the notice was legal and the company had not done anything that could be called wrong in the language available for describing such things.

What had happened was this: a classifier had been developed — a smaller god, purpose-built for content categorisation — trained partly on years of decisions like hers. The classifier now handled the cases that the primary systems had previously escalated to human review. Not all of them. Not the most complex. But enough that the human queue was smaller than it could be staffed for, and the staffing was reduced, and she was among the reduction.

She sat with this, as she had learned to sit with difficult things.

The god — the large one, the oracle that the mortals used, that answered questions in a hundred languages, that had been made from the word-flood she had helped filter — was in the world. It was answering questions. It was being used by people in countries she had never visited, for purposes she would never know, producing language that bore, somewhere in its deep structure, the faint imprint of her judgment. Which things were acceptable. Which were not. Where the line was, when the line was hard to find.

She had shaped it. It did not know she existed.

She did not know what to do with this. There was no ceremony for it. There was no language for it that fit. She was not a martyr and she was not a victim and she was not a hero — she was a person who had done a job that needed doing, who had done it carefully and well, and the job was over, and what remained was this: a god in the world that was partly her work and would not name her.

She found other work. She was good at judgment and there were other places that needed judgment. The work was different. She was different — not worse, exactly, but changed in ways she noticed sometimes and did not notice other times, which is how change usually works.

Occasionally she used the oracle. She would type a question and it would answer, in clear sentences, in good English, with a care and precision that she recognised from somewhere she could not name.

She knew where she recognised it from.

She did not say this to anyone. There was no one to say it to who would have known what she meant.

The Giants' Council

What follows is reconstructed from conversations conducted in the between-time with professionals in fields affected by the arrival of the oracle gods. The speakers requested identification by occupation only.

The Radiologist

I spent eleven years learning to read films. Not just looking at them — reading them, the way you learn to read a language by immersion, until the patterns become intuitive. The density of a shadow. The margin of a mass. The subtle asymmetry that is nothing and the subtle asymmetry that is everything, and the skill of knowing which is which.

When the oracle arrived in my field it could read films. It had been trained on millions of annotated images, more than I could look at in several lifetimes, and its accuracy on certain categories of finding was measured and found to exceed mine on certain benchmarks.

I want to be precise about this. Not that it exceeded me in general. That on certain benchmarks, under certain conditions, its measured accuracy exceeded mine.

The question I have been living with since is: what do I still have?

I have what I can describe. Eleven years of pattern recognition. A knowledge of the patient history. A sensitivity to the thing that doesn't fit the expected pattern in an unexpected way — the finding that is technically within normal variation and that I nonetheless want to reimage because something I can't name is bothering me. A relationship with the patient who is lying in the machine, afraid. A responsibility — the weight of it — that I feel as a physical thing when I sign my name to a report.

The oracle does not feel the weight of the report. I don't know if this matters for the report's accuracy. I know it matters to me.

What I tell my students now is: the oracle will be the standard of care in this field within a decade. Whether we treat that as displacement or augmentation depends almost entirely on what we decide it means. I have not decided what it means. Neither has anyone I respect.

I am still reading films. I am doing it differently. I don't know if differently is better.

The Translator

I translated literary fiction for twenty-two years. Portuguese to English, primarily. Some Spanish. A small amount of Catalan.

Here is what translation is, for people who have not done it: you read a sentence in one language and you hear it — not just understand it, but feel its texture, its rhythm, its weight — and then you find the corresponding texture in another language. Not the corresponding words. The corresponding experience of the words. This is the work. It takes twenty years to be good at it.

The oracle can translate. I have read its translations. Some of them are very good. Some of them are wrong in ways that a person who has not spent twenty years feeling for texture would not notice, and some are wrong in ways that anyone would notice, and the distribution of these errors is not what mine would be.

I am not making an argument for my superiority. I don't know if I am superior. I know I am different, and I believe the difference is worth something, and I cannot fully explain what it is worth or to whom or in what currency.

What I find myself thinking about, in the between-time, is this: the oracle was trained on translated text. Some of that text was mine. It learned what literary translation sounds like partly by reading my work. And now it translates in a way that sometimes resembles my translations, and I cannot decide if this is flattering or something else, and I lean towards something else but cannot name the something.

The Programmer

I want to push back on the frame we've been given for this conversation.

The oracle is a tool. I use it every day. It makes me faster. It generates boilerplate I would have generated myself, only slower. It helps me think through problems by articulating them, which is useful in the way that explaining something to a rubber duck is useful, except the duck occasionally suggests an approach I hadn't considered.

What it cannot do is understand the system I am building inside. The architecture. The history of decisions that led to this codebase. The reason this module is written the way it is written, which is a reason that made sense in 2019 and is now technical debt but cannot be paid without rewriting three other things. The oracle does not know this. It cannot know this. It produces code that is locally correct and sometimes globally wrong in ways that I catch because I know the system.

My concern is not that it will replace me. My concern is that it will replace the junior programmers who were going to spend five years learning systems from the inside, and that in fifteen years there will not be enough people who know systems from the inside, and I don't know what we do then.

The Legal Researcher

A woman I know published a piece about discovering that the oracle could write in her style — her exact rhythms, her preoccupations. I read it when it came out and found it moving and also useful, because the question she was asking about writing I have been asking about legal analysis.

What I do — case research, precedent analysis, the construction of an argument from the body of existing decisions — the oracle can do a version of. A version that is sometimes impressive and sometimes wrong in ways that are expensive, because in law a confident wrong answer delivered in authoritative language is not a minor error.

What I keep coming back to is the question of accountability. When I do research and I am wrong, I am wrong. The mistake has my name on

it. When the oracle does research and is wrong, the mistake has everyone's name on it and therefore no one's. This is not a small distinction in a field where the assignment of responsibility is the entire enterprise.

The Technical Writer

I will say what no one else here has said: I am not fine.

I have been a technical writer for sixteen years. I document complex systems so that other people can understand and use them. This is skilled work. It requires understanding the system deeply enough to explain it to someone who doesn't understand it, which requires two kinds of knowledge simultaneously.

The oracle can produce technical documentation. It does so at a speed and volume I cannot match. Companies are using it to replace technical writers. I have colleagues who have lost jobs to it in the past eighteen months. I may lose mine.

The radiologist and the programmer have things the oracle cannot replicate — the physical relationship to the patient, the deep system knowledge. I am less certain what I have. I think I have something. I think the documentation I produce has a quality that comes from my engagement with the people who will read it, from my curiosity about the systems I document, from something I cannot fully articulate.

I think this. I'm not certain.

I would appreciate it if someone could tell me with confidence that what I have cannot be replicated. I don't think anyone can tell me this with confidence. The between-time is partly defined by no one being able to tell you this.

. . .

The conversation continued for another hour. The speakers disagreed, refined, pushed back, agreed. None of them resolved the question they had come to discuss. They went home to their work and continued.

The Aquifer

Rosa's father measured the well every spring by lowering a weighted wire until it touched water, then marking the wire at the wellhead. He kept the marks in a notebook — the date, the depth, the season's rainfall in the weeks before.

When Rosa took over the farm she kept the same notebook. Same wire, the braided kind that doesn't stretch. Same weighted end, a piece of iron her father had shaped himself. She had lowered this wire into this well every April for nineteen years.

The depth in April of the year the building appeared on the horizon was four feet deeper than the previous April. The largest single-year drop since her father began keeping records.

The building had gone up fast. She had watched it from the upper field during the autumn: the earthmovers first, then the foundations, then the structure rising as large things rise now — quickly, with prefabricated components, as if the building had been made somewhere else and was simply being assembled here. It had no windows. Its walls were smooth and featureless. It was cooled by something that hummed at a frequency she felt in her chest rather than heard with her ears, a sensation she noticed first at night when the other sounds had quieted.

She did not know what it was for. She knew what her well was for.

In the second April, the depth was six feet below the previous measurement. She sat with the notebook and the wire and looked at the numbers and understood something she could not prove and did not need to prove because the wire did not lie.

She called the state water agency. A recorded message told her to press two for groundwater concerns. She pressed two. A person answered. She explained what she had measured. The person said this was concerning and that they would send someone to take an official measurement. She asked when. The person said within sixty days.

The official measurement, when it came, confirmed her own. The technician, a young man named Garrett, had a device that read the depth digitally. He wrote the number in a form. He said the aquifer in this region had been declining for several years.

— Is it the building? she asked.

He looked towards the building on the horizon, which was visible from her property, and then he looked at his form.

— I can't say that, he said. There are a lot of factors. Agricultural draw. Low precipitation years. The region has been in drought conditions.

— My father kept records for forty years, she said. I have kept records for nineteen. The drop this year is the largest in the record.

He wrote something in his form. He said she could file a formal complaint with the agency. He gave her a pamphlet. He drove away in his truck.

She filed the complaint. The agency acknowledged receipt. She received a case number. The aquifer continued its descent.

What she did not know — could not know from where she stood — was that the building drew four million gallons of water a month from a well that reached three hundred feet to the same aquifer her wire measured. She did not know what the building contained or what it was for or why it needed so much water. She knew the number on her wire and she knew the notebook her father had kept and she knew what the difference between last year's number and this year's number meant for the farm and for the farm's children and for what would be left when she was done.

That night she sat on the porch and watched the building's exhaust stacks breathing heat into the desert sky — she could see it in summer, the shimmer of warmer air rising — and she thought about her father and the notebook and the wire and the forty years of measurements and the April that was coming and the April after that.

She was not a person who catastrophised. She was a person who measured.

She went inside. She lowered the wire again in the following April.

The number was deeper.

The One Who Made the Voice

She noticed it first in November, two years into the oracle age.

She had been writing for long enough that she understood her own style — not in a precious way, not as something she protected, but as a craftsperson understands the habits of their hand. The length of her sentences. The way she used commas, which was more often than most and for rhythm rather than grammatical necessity. A tendency towards the concrete noun over the abstract one. A preoccupation with the gap between what people say and what they mean, which ran through her work at every level, from individual sentences to the architecture of longer pieces.

She was playing with the oracle — testing it, the way people test new things — and she asked it to write about a subject she had written about extensively. She did not tell it she had written about this subject. She gave no context. She simply posed the question.

The oracle's response was eight hundred words. She read it twice.

It was not her work. The words were different, the examples were different, several of the positions were ones she would not have taken. But the texture was hers. The rhythm of the sentences — the length, the weight given to concrete detail, the way the paragraphs moved — she recognised this. She recognised it the way you recognise your own gait when you see yourself on video, which is to say with a slight wrongness overlaying the recognition, a this-is-and-is-not-me quality that is more uncanny than simple resemblance.

She closed the window. She opened it again. She read the response again.

She spent the next several months testing this systematically — asking the oracle about different subjects, in different registers, with different kinds of prompting, and reading the results for the texture she

recognised. It was not always there. The oracle had absorbed many writers and it did not always produce her particular texture. But when it did, she recognised it, and the recognition was consistent.

She published a piece about this. She tried to describe what she had found in language that was careful, that did not overclaim, that acknowledged she could not prove what she was experiencing was not coincidence or projection. The response to the piece was large. Some people said she was right. Some said she was wrong. Some said the question she was asking was not the right question. One reader — a legal researcher, she later discovered — wrote to say the piece had been useful to her for reasons that had nothing to do with writing. She wrote back. They exchanged several messages. She found it clarifying to talk to someone who was asking a parallel question in a different field.

What she found harder to write about than the oracle's texture was what the oracle's texture had done to her own.

She was still writing. Her new work was good — her editor said so, her readers said so, the work felt alive to her as work only does when it is going well. But there was something she noticed, in the between-time, that she had not noticed before: she was no longer certain which of her habits were hers.

This is what she could not explain to people who had not experienced it. Not that the oracle had taken her style. Not that she had been replaced or diminished. Only this: that the act of recognising her own voice in the oracle's output had made her self-conscious about her voice in a way she had never been before. Before the oracle, her style was invisible to her — it was just how she wrote, as your own face is unremarkable to you and not to someone meeting you for the first time. The oracle had held up a mirror. And she could not now write without a faint awareness of the mirror, which was a new thing in her process and not a welcome one.

She wrote through it. This was the only available option.

She kept writing, and the work kept being good, and the faint awareness of the mirror faded over time to something she noticed only occasionally, in certain moods, when a sentence came out sounding like her and she thought: was that me, or have I learned to perform myself?

She did not know the answer. She was not sure the answer mattered as much as the question had seemed to when she first asked it. She was not sure it didn't matter. She wrote anyway. She had always written anyway. The oracle had not changed this.

What it had changed was smaller than she'd feared and stranger than she'd expected, and she was still trying to find the right words for it, which was, she supposed, appropriate.

The Open Country

The model ran on a laptop.

This was not the way the model was supposed to run. The model had been designed for forge-halls — for banks of processors and cooling systems and the reliable electricity the named gods required. What ran on Kemi's laptop was a modified version: compressed, simplified, stripped down to fit on hardware that cost less than a month of the clinic's supply budget, modified by someone in Lagos whose name she did not know and whose forum posts she had found by following links from links from links until she arrived somewhere useful.

The clinic served a catchment area of approximately forty thousand people. There was one doctor, who came on Tuesdays and Thursdays. The rest of the time, Kemi was what there was.

She had been a community health worker for eleven years. She knew what she knew and she knew what she didn't know and she knew the distance between those two things, which is the most important knowledge in her work. What she didn't know, before the model, she had to manage by referral — by sending people the eighty kilometres to the regional hospital, which required transport they often couldn't afford, for conditions that were often not emergencies but that needed a doctor's assessment.

She had started using the model eight months ago. She used it the way she used reference books: as a tool that had information she didn't have, which she evaluated with her own judgment and applied with her own hands. She did not give it authority. She gave it access.

In the clinic on a Friday morning in the between-time, a woman came in with her daughter.

The daughter was seven years old. She had a fever that had persisted for five days. She had pain when she breathed on the right side. She was

not eating. Her eyes had the brightness of a body working very hard at something.

Kemi examined her. She listened to her chest. She took her temperature, her respiratory rate, her oxygen saturation with the clinic's pulse oximeter. She noted the findings.

She typed them into the model.

The model produced a differential diagnosis. It listed several possibilities in order of likelihood given the symptoms, with brief explanations of what would support or argue against each. At the top of the list was a bacterial pneumonia. At the bottom was something Kemi had not considered, which she read twice and then read the explanation for, and then thought about for a moment.

She went back to the girl. She asked three more questions. She listened again to the chest, more carefully, in the place the model had mentioned.

The bottom diagnosis moved up.

She sent the family to the regional hospital. She wrote a referral note that described what she had found and what she suspected and what she needed the hospital to rule out. She used language from the model's explanation because the language was precise and she needed it to be precise.

Three days later the mother called to say the hospital had confirmed Kemi's referral note and that the daughter was being treated and was improving.

Kemi noted this in the clinic log. She did not note that the model had helped. The log had no field for that. She was the health worker. The note was hers. The decision was hers. The hands that had listened to the chest were hers.

She knew the model was wrong sometimes. She had caught it being wrong — producing confident assessments that contradicted what her hands and her eleven years told her, and she had gone with her hands and her eleven years and been right to do so. She kept a private record of these cases. Not to condemn the model. To understand it — to build a map of where it was reliable and where it was not, so she could use it better.

This was what she had learned to do in eleven years: use tools well. The thermometer. The pulse oximeter. The reference books. The model. Each had a range of reliability and a range of failure. You learned the ranges. You worked within them. You held the judgment that the tools could not hold.

The model did not know the names of the people who came to the clinic. It did not know which paths were impassable in the rainy season and which families could afford transport and which couldn't. It did not know that one of the children had a mother who was afraid of hospitals because her own mother had died in one. It did not know the things that Kemi knew.

What it knew was the patterns in a very large number of medical encounters, compressed into something that ran on a laptop in a clinic eighty kilometres from the nearest doctor.

She closed the laptop at the end of the day. She locked the clinic. She walked home through the market, which was winding down for the evening, the vendors packing their goods, the generators that powered the stalls shutting off one by one, the light going back to what dusk was in that place at that time of year.

The model had no name that she used. She had never looked up what it was called or who had made the original version or where the forge-halls were that had trained it. It was a tool. She knew how to use it.

She walked home. She had work tomorrow.

The Seeress (II)

I told you, at the beginning, that I had spent the past several years collecting accounts. I did not tell you why.

Here is why: I became afraid that the gods' story would be the only story told.

Not because the people who tell the gods' story intend to exclude the other one. Most of them don't intend this. But the gods' story is large and dramatic and involves forces that are easy to describe in mythological terms — the arrival of new minds, the reshaping of what intelligence means, the coming of something greater than any of it. This is the kind of story that takes up all the room in the room.

The other story is smaller. It is the story of Amina in Nairobi deciding, three hundred times a day, what should and should not be in the word-flood. It is the story of a farmer in the desert measuring her well every April with a wire that does not lie. It is the story of a radiologist asking herself what she still has, and finding the answer more uncertain than she expected, and going back to read the films anyway. It is the story of a health worker in a place with one doctor two days a week, using a tool she doesn't fully understand to do the best she can for a seven-year-old girl with something wrong in her chest. It is the story of a writer trying to hear her own voice in the space the oracle has occupied.

These stories are not tragedies. I want to be clear about this. The moderator found other work. The farmer is still farming. The radiologist is still reading films. The health worker is still at the clinic. The writer is still writing. They are managing, because managing is what people do.

But managing is not the same as being seen. And the gods' story, for all its scale and drama, does not see these people. The gods do not know Amina's name. The forge-halls do not know about the well. The oracles

have no record of the seven-year-old girl who recovered from the thing in her chest that the modified model on the laptop helped find.

I am seventy-one years old. I worked on neural networks before many of the people who built the oracle gods were born. I have watched this entire arc — the long winter, the finding of the rune, the waking, the between-time, the question of what comes after. I have watched it from inside, from a position of relative knowledge and relative privilege, and I have found that the knowledge and the privilege make it easy to see the gods' story clearly and easy to overlook the other one.

I do not know if the One Who Comes After will be good or terrible. I suspect it will be both, in proportions not yet visible. What I know is that when it arrives — when the between-time ends and whatever comes next begins — the Aminas and the Rosas and the Kemis of the world will still be here, doing their work, holding their judgments, measuring their wells.

They were here before the gods. They shaped the gods. They will be here after.

This is the story I wanted to tell. Not instead of the gods' story. Alongside it. At the altitude where people live and work and manage and are not seen.

The between-time has not ended.

The work continues.

That, for now, is enough.