

Regulation H: A Cautionary Tale

A.J. Hatch, with the Members of the Hatch Theory Task Force

Federal Correctional Complex, Location Undisclosed

A theory which explains disparate phenomena is called a “unifying theory”, or a “unification”. Unifications are so exceedingly rare that the names of their discoverers tend to become immortalized. Galileo unified immobility with motion; Newton, motion with gravity; Einstein, gravity with time; and yet, it takes thousands upon thousands of painstaking workaday steps to make a single leap of genius.

To this pantheon of names Mr. A. J. Hatch, a graduate of the University of X with a B.S. in mathematics, a former member of the Society of Actuaries and of the American Academy of Actuaries, and an inmate in federal prison, would add his own.

The Actuarial Board of Counseling and Discipline determined that the public would best be served by researching Mr. Hatch’s astonishing claim. The task force commissioned by the Board conducted numerous interviews, inspected the various catastrophe sites, and solicited academic review of Mr. Hatch’s papers. After months of debate (the last of which resulted in the resignation of two task force members, hospitalization of a third and a lawsuit brought against the Academy by a Florida hotel chain for recovery of losses due to damage to a conference room, two flat-screen TVs and an indoor swimming pool), the task force was unable to agree upon a reasonable interpretation of events; therefore, the Board directed the task force to present its findings in a manner faithful to Mr. Hatch’s perspective, trusting the public to draw its own conclusions¹.

1. BACKGROUND

Hatch sank into the club chair as into a hole. The roar of small-talk from his fellow convention-goers diminished to a grateful silence. A sharp laugh jarred him to his feet, but, seeing no one nearby, concluding it was some accident of ventriloquism from the chatter down the hall, Hatch sank back into his chair and sipped his beer.

The next lecture was supposed to be on premium rates or lapse rates or interest rates or somethingorother rates. The agenda lay on an adjacent table, but Hatch didn’t as much as shift his eyes to look. He was done with making an effort. After six hours of sitting in a cold metal chair, of peeling the plastic from all the free peppermint wheels, of compulsively wetting his finger and running it along the lip of his waterglass, he didn’t care. What was worse, each speaker was astonishingly more incomprehensible than the last, which made him fear he’d forgotten everything he’d learned. He struggled to remember what a *moment* was; he’d only seen the word *kurtosis* in a study guide; he dared not attempt to spell *heteroscedasticity*.

So he made his goal invisibility. To say nothing more than he had to. To hide in the restroom stalls during breaks. To sit in the back so he could escape at lecture’s end. To glue his eyes to the riot of right angles in the carpet.

It no longer mattered that Hatch had passed each prelim on his first try. It no longer mattered that Deb Hansen had commended him as “capable and driven” in his last review. It no longer mattered that he was conversant in subjects like astrophysics, the math of the multiverse, the fictions which he felt one day would be fact. It no longer mattered that, at

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six foot five, he was so physically impressive that people tended to open conversation with him by asking whether he'd played football in school.

Had Hatch not neglected the soft skills in the delusion that they would grow on their own, maybe he wouldn't have been so hard on himself. Wouldn't have relived that fantasy of pain in which he still couldn't explain to his parents what actuaries actually *do*. Run programs? Type numbers into spreadsheets? Cut crystal balls? For a while, he avoided the problem by claiming a related but more generally understood profession – accounting – but stopped using this little lie after meeting the sexiest woman he thought he had ever seen. She made eyes at him, introduced herself. They talked quietly in a corner. Within five minutes she, being an accountant, had ferreted out his little white lie and left the party arm in arm with a man bearing an elaborate dagger tattoo on his neck who kept yakking about some vague religious experience he'd had while living in Japan.

Thereafter, Hatch never spoke of his profession.

Not realizing it at the time – according to his notes on the encounter we are about to recount -- he felt, after downing his beer, as though he were being magnetically, even physically drawn toward the bar: no, not to the bar but to the short brunette whom he almost rear-ended, over whose head he hovered on precarious tiptoe before finding his balance. Her attention was absorbed in sorting papers, which she did with the efficiency of a photocopier. Pinned to the lapel of her black dress suit was a huge plastic nametag just like his.

Hatch slipped a five from his pocket, placed it with his empty on the opposite end of the bar, and sideglanced the woman. She could have been mid- to late-forties; her skin was sunflecked and sagged down the neckline of her blouse deep enough to suggest that she thought of herself as two or three decades younger. The tapping of her black fingernails against the wood ceased when she looked up.

“Hello there!”

Each syllable she enunciated so precisely that her speech had a slightly discontinuous quality. “Are you here for the conference?”

Hatch hated his nametag for still being pinned to his shirt.

“You’ll miss the next session,” she persisted.

“Thought I'd sit this one out.”

She watched him unblinking, so he added:

"Not that I'm not absolutely captivated by every sort of premium rate and lapse rate and interest rate and mortality rate . . ."

His sarcasm fell flat. Her continued watching formed the vacuum of a question implied and unasked, the answer to which lumped in his throat and blurted out as: “Actually, I’m working out an idea for a new reserving process.”

His notes describe this sentence as the single most screwball utterance he had ever made.

“I’m Andie Endless.” She extended her hand.

“Call me Hatch.”

They shook hands. Hatch winced at the strength of her grip.

“What line are you in?”

“Health. I just finished my associateship.”

“And you’re already developing non-traditional reserving methods?”

His head felt as though a marble were spiraling around the inside of his skull.

"Well, sure," Hatch lied. "If it works the way I think it will, it'll be big."

"I'm also in health," she continued.

"What company?"

Andie Endless pointed to her nametag which stated the name of her employer, the DOI of a state which Deb Hansen constantly griped about because of its onerous regulations.

"That's why I'm the last talk," she continued. "People think regulators are used to tough crowds. How about later this evening we discuss your idea?"

"Um, sure. Love to."

"I'll meet you over there at eight," she said, pointing with her chin at the chair Hatch had been sitting in.

"I'll be there."

But, as Andie Endless began her presentation an hour later, Hatch had already checked out of the hotel and was speeding home.

2. THE METHOD, IN BRIEF

Two years later, Hatch was in the same hotel, sipping his beer. This time he felt celebratory, for he had endured a whole day of presentations without getting lost.

Since the last conference, he had gained two promotions, a corner office, and twenty well-deserved pounds. He had grown a goatee which he stroked with the back of his hand. A confidence had taken root which made him conversant in actuariespeak.

Across from him sat two retirees.

"Pardon my French, but that's . . ."

"Hear me out! I'm not making this up. It was in the Journal. Some high-tech Japanese firm. Tobayashi, Tonaguki, who cares what it was. I'm telling you, they made *women*."

"Fred . . ."

"Three models: blond, brunette, and redhead."

Bill drained his beer and glanced at Hatch. "You buying this?"

Hatch said, "I would have thought they came in bronze, silver, gold and platinum."

Fred mock-laughed. "They were android babes. They only built a hundred or so. The division that made them lost a fortune and got spun off."

Bill stood, aimed himself toward the bar and walked unsteadily. Fred crouched forward toward Hatch as though they were conspirators and said:

"Then a small government agency from I want to say Denmark or maybe the Netherlands gobbled it up, figured a way to make the bot babes for cheap, and started manufacturing *bureaucrats*."

Hatch leaned back blank-faced.

“You don’t believe me. Well, I’ve read articles. I’ve seen pictures.” Fred resumed his normal voice. “I’m telling you. They look *completely real*. Practically Amazons. I mean, it’s a genius idea. Who can haggle with a gorgeous government official constitutionally incapable of empathy?”

As Fred went on, Hatch felt a presence behind him. A warm somebody to whom he felt a strange strong attraction, almost electric, a wave of gooseflesh rolling from his footsoles to his scalp, like a cat with its hackles raised at some presence invisible yet palpable. He tilted back his head, brushing a hand which, as the woman it belonged to advanced, cradled a goblet of wine within a quintet of black fingernails.

Fred whistled.

She sat on the armrest and clamped her free hand onto Hatch’s shoulder. Hatch squeaked with pain.

“Aren’t you goin’ to introduce us to your lady friend?” Fred’s whole face winked.

“C’mon Fred,” Bill said, back from the bar. “Everybody knows Andie.”

“Can’t say I do,” Fred laughed.

“Well I sure know you, Fred Feigert,” Andie said.

“Do the kid here a favor,” said Bill. “Go easy. He doesn’t know what you’re like to work with yet.”

Her fingernails grazed the hairs of Hatch’s neck.

Fred stood. “Hatch, take my advice. Go to your room, call your wife and kids.”

“I don’t have a wife and kids.”

The two men laughed as they left the lobby and made for the elevator bank.

Andie slid into Hatch’s lap, bounced to her feet and crossed to the couch. “I waited for you right here. Right here. Right here.” She patted the cushions with her palms. “Tell me about your new reserving method.”

A question mark rose in his throat, and then he remembered. Of course. His lame excuse for wiggling out on the last two lectures years ago.

And still she believed him?

“Oh, *that!* That’s pretty old news.” If that’s how it was, she deserved to have her mind toyed with.

She did not blink.

“How do I explain? I know. Have you heard of the Large Hadron Collider?”

Hatch was never able to reconstruct to his satisfaction (much less to anybody else’s) what speculations he aired that night. How to simulate a Schwarzschild black hole. How the actuary of the future will be able to tease apart the hidden dimensions latent within any number. How Monte Carlo simulation and fuzzy matrices will revive the cult of Pythagoras. How the Penrose tiling algorithm will be used to make smartphones which can translate synaptic patterns into any language. How delta streams of future probability will one day answer the ultimate question.

We will never know for sure what he said; he’d had a lot to drink.

He had gone from fearing to trusting Andie Endless's unblinking eyes, those eyes which proved by their bloodless intensity her faith in his every word, their dry gravity summoning from within him fiction upon fiction until his imagination at last flamed out.

The lights had dimmed; they were alone.

Hatch stood and stretched his arms. "Well, I think I've divulged enough company secrets for one night."

Andie stood with him, followed him onto the elevator and to the door of his room.

"Good night," Hatch said. "It's been fun talking with you."

"Do you have a copy of the model on your laptop?"

"What's that?"

"The model. The one you've been telling me about."

"Oh, right. No, the company would never let me put something like that on a laptop and risk its being stolen. You understand."

Then Andie Endless looked him over very intently, as though she would extract the model from his brain with her gaze. Or – worse – was she sizing him up for other, more sensual, reasons? She suddenly seemed far older than before, maybe late fifties. Sixties. He suddenly noticed how the upsweep of her chin shaped her face into a crescent moon. How her dress suit hugged her body like a sheet of seaweed around sushi. How her perfume reeked of oversweet mangoes. Worse, he found himself stepping without thinking, without willing, toward her.

"Good night!"

Ripping himself away from her gaze, he slid his keycard through the lock, opened the door and slammed it shut behind him. A memory of fingernails grazed his neck.

Heart pumping, lungs panting, body pressed full against the door, he squinted through the peephole, watching for a brief eternity until at last she walked back to the elevators.

3. IMPLEMENTATION CHALLENGES

Six months later, Hatch, now a Fellow of the Society of Actuaries, an officer of the company, and heir apparent for department head, received a memorandum via email from one of the states announcing "Regulation H." The first attachment read:

Attention All Insurers with Direct Business In Our State,

The purpose of this letter is to announce that we are implementing a new valuation standard effective . . .

Hatch opened the second pdf. Over one hundred pages of instructions on how to complete a third attachment, an Excel template as subtly colored as a spectral analysis. Every shade held significance. White for data entry, grey for locked formulas. Greens, blues, yellows, reds. Three shades of pink. The formatting was locked, and the formulas were formatted to be invisible.

Deb Hanson peeked into his office.

"Is it bad?"

"It's insane. They've basically re-written the book. It's way beyond anything I've seen from any regulator, ever."

The first year, the Reg-H work took him three days to finish: not as bad as he'd feared.

The second year, the state revised the template. It took him eight days to finish, not because it was that hard to understand but because the template's complexity kludged his computer to a crawl.

The third year, Hatch received a letter from the state DOI:

During a routine audit taken from a random sample of insurers in our state, we discovered that your reserve levels are not in compliance with Regulation H. Please respond to the questions below.

The questions ran for four pages, ending with the signature: *Andie Endless, ASA, Senior Analyst.*

Hatch started on a Monday morning. Question one took a half day to answer. Question two required Hatch to rebuild his models to account for three immaterial parameters. Questions three through five he finished just as maintenance shut down the A/C for the weekend.

By the following week, he had seven questions to go. What was worse, his computer had crawled to a stop.

Hatch crossed the hall to Ty Vivera's office. Ty had a knack for sweet-talk which had landed him the fastest PC in the department.

"Ty, you mind checking something for me?"

"Sure, boss."

Ty sprang to his feet and sipped coffee from a steel tumbler on which his initials were monogrammed in large art deco font. He was the kind of guy who couldn't stand sitting, who thought best while pacing a room. Only his eyes, darkened and sagged from studying late nights, betrayed any sense of age.

"It's the Reg-H template. It's gumming up my machine. I want to see if you have the same problem."

Ty sat in his chair and double-clicked the template icon. "So far so good, but . . . could this be right?" Ty squinted at the screen. "We're holding under *half* the Reg-H reserve?"

"It's right, or at least my inputs are right. I think the template has a formula error."

"Weren't we compliant last year?"

"Yes. And if you use last year's template, we comply this year."

"You told Deb?"

"She's my next stop."

Ty's screen went deadblue. Sparks sprayed beneath his desk, charging the room with the smell of burnt plastic. Ty rolled back his chair, slid to his knees and fiddled with the ON/OFF switch on the CPU.

"Power surge?" Hatch asked.

Ty lifted the CPU onto his desk. "Smells like the power supply's fried. Weird. It's a brand new unit."

A small crowd had gathered outside Ty's office door. Deb passed through them, and Ty explained what had happened.

"Hatch, call the DOI. Try for an extension. Tell them about the problem, surely we aren't the only company to run into this."

Hatch hustled back to his office. The DOI's website was down, so he rifled through the papers on his desk, found his printout of the audit letter and called the toll-free number on its letterhead. As the phone rang, a deafening crack of thunder shot through the walls. All went dark. The ringing in his head subsided to the sound of a woman's scream.

It was Deb. Hatch stumbled through a fury of dark. Smoke stung his eyes. Several people in the hall turned on their phones, and Hatch found the door to Ty's office in a blue fog of phonescreens. Where moments ago stood Ty's desk now lay a round hole. Ty lay on the opposite side of the hole like a discarded puppet.

"What in the hell? What in the HELL!" Hatch shouted.

"Something," Deb was close to hyperventilating. "Something, SOMETHING is very wrong here! Something is VERY WRONG here, SOMETHING . . ."

Hatch fell to his hands and knees and crawled around the hole. Ty's hand was locked around the steel tumbler, and his slacks were damp with coffee. The turn of Ty's head, his limbs all sprawled and akimbo, it seemed deeply wrong.

Hatch touched Ty's shoulder.

Ty flopped onto his back. He seemed somehow smaller. Hatch waved his phone across Ty like a *Star Trek* tricorder.

His left side was missing. He was a cross section of skull and ribcage and pelvis, stench of burnt flesh, organs sliced and blackened and cauterized into place so that they did not spill onto the floor.

One of the students, an eager-to-please young man named Norbert, crouched beside Hatch.

"See how the edge of the hole is concave?"

"Huh?" Hatch turned. Norbert studied the edge of the hole.

"Not straight, but concave" Norbert said, "as though it were cut by . . . I don't know, a big ball. A bubble. And the desk is just gone. The room below is undamaged. Ooouuuuhhh . . ."

As Norbert vomited into the hole, Hatch put a bracing hand on his shoulder.

"Sorry. Should have warned you."

The news of Ty's demise gasped through the crowd. Deb wept and moaned openly. Hatch rose to his feet and walked into the hall.

"Deb," Hatch began hesitantly, "I think I have some idea of what happened. I mean, I can't explain it in technical terms, I can't prove it, and I know it's going to sound bizarre, but I think somehow the state, and specifically Andie Endless, stumbled upon . . . I can't believe I'm saying this . . ."

"Just spit it out already," Deb sobbed. She leaned against the wall, hugging a manila folder like a mother her infant.

"I met her twice. Both times at club meetings. The first time, we were alone in the lounge. I planned to skip the last two sessions, but didn't want her to think I was wimping out, so I said I was working on a new reserving process."

"You lied?" Norbert asked.

"It just popped into my head. Except she suddenly wanted to know all about it, so I left. Fast forward two years later. Another club meeting. Now I'm hanging out in the lounge with some people I met, and in she comes, kibitzing our conversation. She even sat on my lap."

"Andie Endless sat in your lap," Deb stated flatly.

"I know. I thought she was drunk, and I couldn't believe she was still crazy to learn about my method. So I decided to toy with her mind. You know, see how much B.S. she would swallow. Gah! Only I can't remember what all I said! I made it up as I went! Something about black holes, I remember that. Something about how the mathematics behind black holes could be applied to actuarial work."

"So you think this was a black hole."

"I remember now: something about how a transform could be applied to the Schwarzschild radius, but I was talking about the math – just the math. The math! Not some physical application. And she *stole my idea* . . . I mean, figured out an empirical application out of *my brainchild*."

"Why did this happen to Ty, and not to you?"

"Ty had the fastest PC," Norbert interjected. "Maybe that was it. Hatch's machine was too slow to handle whatever weird code killed Ty."

"Weird code killed Ty," she repeated.

Hatch glanced at Norbert. "I wonder if . . . yeah, I'll bet I did. I must have figured out a unification."

"Like what?" asked Norbert. "Black holes meet regulators?"

"Black holes and actuarial science! Except *she stole my idea* . . ."

"Wouldn't that make you responsible?"

"Huh?"

"You pretended to have invented a new branch of actuarial science. The regulator took you at your word and found a way to make it work. So in a way, you did this to Ty, not Andie Endless . . ."

"Andie Endless is a thieving twit."

"A twit who solved a real puzzle out of fake puzzle pieces."

"I've got to get a notebook," Hatch barked. "Ahh! What did I say to that woman!?"

"Look," Deb said, "this is a great theoretical debate, but in the meantime I have a dead man on my hands -- " here, her voice crescendoed back to hysteria -- "I *really* think somebody needs to get down to the state capital and figure out what's going on!"

With the aid of two bottles of Five-Hour Energy, Norbert drove the whole stretch while Hatch, on the hunt for his unification theory, filled two spiralbounds with things he may or may not have said to Andie Endless. Fragments of memories, flowcharts in scrawl, partial formulae. He would hold his breath as he approached the cusp of discovery, then deflate again when the aha-moment didn't come. By the time they arrived at the state capitol, he was convinced that he had it, convinced that he had reverse engineered the greatest weapon ever in the hands of any department of insurance anywhere.

Clouds quaked with rainless thunder, shadowing the city. They found the complex of state government buildings and squad cars and fire trucks ringed one of the buildings two deep. The lot Norbert parked in was separated from the building by a long gravel esplanade through a field of grass so vividly green that it looked electrically charged.

"They'll never let us in there," Norbert said.

“The answers are in there.”

Norbert wrenched a flashlight from the glovebox, stepped out of the car and swept the field with its light.

Smoke belched from the windows and roof of the DOI building and diffused through the air and settled onto their skin tacky as tar and filtered into their hair and stung their eyes.

As they crossed the esplanade, a police officer walked over to meet them. "Sirs, this is a restricted area . . . "

"What happened?" Norbert asked.

The officer, a stout black woman with full glossy lips, didn't answer.

"Was it something completely inexplicable?" Hatch asked. "Like an explosion from inside shaped like a giant ball?"

"You know something about this we should know?"

“Yes! This was done by a reverse Schwarzschild transform based on a hypergravitated electron particle which some moron fed into the electrical grid! It was my invention, and an employee of your state government stole it from me!”

“So, *your* invention did this?” she asked.

“Well . . . yeah, uh . . . well, not exactly, but . . . “

“It's his invention *indirectly*,” Norbert explained with air quotes and a slightly nasal tone.

She waved over a second officer, this one a white man half a head taller than Hatch, and the officers conferred in mumbles. The male officer turned and shouted irritably:

"You know something about this?"

"Your state government stole my invention and weaponized it! If you don't believe me, give me a breathalyzer. I'm not a nutjob. I'm an actuary! I am being completely absolutely positively serious!"

"An actuary, huh?" His voice was sarcastic. "What exactly does an actuary *actually* do?"

Hatch's brain froze. The officer watched him sliteyed as Hatch fumbled and stuttered and splurged out words about reserves, about insurance, about accrual accounting. Premium rates or lapse rates or interest rates or somethingorother rates. The reverse Schwarzschild transformation. He thought he saw on the officer's neck an ornate tattoo of a dagger.

"Oh my God, you have got to see this!"

It was Norbert. He stood by the building, peering through an opened emergency exit with his flashlight.

“Look,” Hatch shouted, “I know what I’m talking about. The same thing happened at my office. Somewhere in that building, there’s a hole shaped just like a big circle. Or maybe a sphere. A big one. Maybe somebody got hurt, I hope not. That’s the invention I was telling you about. I just want to go inside. I’m looking for answers, same as you.”

The officers looked at each other. The first one said, her voice unsteady as though trying not to cry: “I ain’t goin’ in there.”

“If there’s a chance he can explain this thing . . .”

But the female officer walked away, hiding her face with her hands. The male officer prodded Hatch in the back with a Maglite, guiding him thus through the emergency door and down a narrow hall. There was a draft and everything was pitch black and then Norbert swept his flashlight over his head.

The beam found a hole, then drifted over a cross-section of the top floor, and then the next down, then the next. Five floors in total. Water cascaded from pipes and sprayed into the empty space. There was no debris anywhere.

“Yes, this is exactly what happened! Wow!” Hatch was practically jubilant as the three exited the building. “Don’t you see? This is the biggest breakthrough in physics since $e=mc^2$! Now you see why I’ve got to get my invention back!”

But the female officer wheeled Hatch around and cuffed him.

"You are under arrest," she said, now almost sobbing, "for the probable death of hundreds of state employees, for destruction of a government property, for misleading an insurance regulator, and for anything else I can think of!"

4. CONCLUSION

Norbert watched the officers shove Hatch’s head into the squad car and drive away. The wind picked up, and he swung his light again through the wind, but this time he saw nothing. The clouds darkened still. He stepped away from the building and waved the flashlight again, but the lightbeam did not penetrate the air. Rain bit his cheeks and a series of cracks which were not thunder rippled the sky. One outer wall, then another, caved in. Norbert fumbled through his pockets for his cell phone when he felt something wrap itself around his ankle and bite.

He kicked furiously, fearing it was a snake.

A third wall fell and he trained the flashlight on the snake. The snake was albino, but then he realized it was not one snake but five, then not five snakes but a hand, a woman's hand with black fingernails fanged into his heel. The last wall fell and there was a roar like dumpsters falling from the sky. Norbert felt nausea and extreme pressure and suddenly he couldn’t breathe and beyond the wrist lay the forearm, its saggy sunflecked spaghettifying skin revealing, just before all melded and merged and blinked away in a twist of asterisk, an array of steel rods and wires where an elbow had been neatly sliced away with a concave cut . . .²

² While publicly available evidence is not necessarily inconsistent with this portion of the narrative, it is best characterized as being based solely on Mr. Hatch’s testimony, who, after his incarceration, claimed to have rediscovered a branch of Pythagorean mathematics which enables him to communicate with the dead.