

CHAPTER 19: THE SHAKING BEGINS

Nervous and sweating from her apprehension, Jenny Fox sat at Chris's workstation in the Seismic Laboratory waiting for 9:33, the time predicted by his Nelson model. The time came. It passed. No earthquake happened. Filled with mixed feelings of relief and disappointment, and incensed at Chris's lack of response, Jenny gathered her books to leave.

The sound of an alarm resonated through the lab. A temblor had been detected.

Jenny turned and saw the map showed shaking at Chris's station near New Simon, then at Steel, Missouri and Dell, Arkansas. The lights glowed yellow then turned red. In the thrill of empathetic pride, Jenny jammed her fist into the air and screamed, "Right On. Chris's earthquake is really happening. His prediction's right. His model worked."

Chris slammed the screen door open just as a violent jerk pulled the world to the side. Tina, Cookie and the two truckers drinking coffee remained in the café. Two more truckers talked checkpoints next to one of the fueling rigs while the truck mechanic read a magazine and smoked in the garage. Just down the road at the small airfield offering parachute jumping, the mechanic dozed in the tool shed while the pilot started his circle to lose altitude for a landing. Alex fell towards the ground, counting the seconds to open his parachute.

The initial motion of the *S-waves* moved the earth forward and backward in the direction of the slip of the fault. The two sides of the fault fracture moved in opposite directions making the jerking at New Simon torsional in nature, twisting clockwise then counter-clockwise.

The foundations of the café lurched from side to side. As Chris started his pickup, Tina stumbled and fell beneath a booth table. "Umph." She expelled her breath just as a ceiling beam ripped lose from the roof and crashed across the counter, splintering tables and chairs from its force.

Every square meter of the fracture generated *S-wave* energy as it ruptured, contributing to the lateral vibration of the rock matrix. The waves came from many different sources along the fracture. Incoherent, they did not beat together like a rhythmic chorus of drums. Wave packets interfered, sometimes adding, sometimes canceling each other out. The earth did not sway back and forth, but lurched and spasmed like an epileptic giant in seizure.

The *S-waves* themselves produced little sound, but their effects created the sounds of crashing windows, cracking trees, falling buildings, and screaming people.

As Chris's pickup accelerated to the west, coffee slopped from the coffeepots and burned Cookie, "God-damn, that's hot. Oh it's hot." He fell, dropping his hand onto the burning stove in an automatic reflex to brace his fall. "Ahhhh. Oh no. Oh no." He clutched his blistered hand and screamed from the searing pain, writhing on the floor in agony.

Gas lines to the stove ripped from the wall and propane gas whistled into the disintegrating café.

When the *P-* and *S-waves* reached the surface, a portion of their energy vibrated and tore at surface features where they emerged. But since the energy from neither wave could be transmitted into the air, some of their energy reflected back into the earth to reappear at some other point.

Like a stone skipping across the water, wave packets glanced against the surface and reflected down. And then the curvature of the earth and the varying density of rock with depth warped the path of the packet back up until they returned to the surface at some other place to do further damage and be reflected again.

Under the truck fueling station canopy a trucker grabbed the windshield washing station and warned, "Get away from that truck. It'll bounce on top of you." Both drivers scrambled away as the truck did the herky-jerky, twisting back and forth on its springs until they broke.

The act of reflection oftentimes doubled the amplitude of the seismic waves at the surface, especially near the trace of the fault where the waves aligned with the fracture. At these points the wave coming to the surface and the wave being reflected interfered to produce enhanced amplitudes, an effect strong enough in some places to throw objects into the air.

Chris swerved his pickup around the mechanic who ran from the barn under the oldest oak with its base trunk 18 feet around. A trucker shouted, "Watch it, the tree's falling." The tree literally disintegrated. Long branches spread out over the parking lot twisted out of their sockets and dropped to the ground, pinning the trucker beneath. One crushed Cookie's old car

into the asphalt. Another ripped down the power lines strung between the utility poles, breaking lines that snapped back and forth, shorting them, one to another then to metal structures on the ground. “Get away. Get away.” screamed the mechanic as he cowered amongst the fallen wires.

Some *P*- and *S-wave* energy converted into surface waves, waves that followed the lay of the land out from the epicenter, the most destructive kinds of waves.

One surface wave, called the *Love-wave*, tossed the surface back and forth, perpendicular to its direction of travel, like a snake slithering across the land. The wave front tracked along the surface, amplifying in alluvial sand, soft dirt, and mud.

Chris guided his heaving truck pell-mell down the road towards his instrument site, ecstatic to be at the epicenter of an earthquake. The acceleration of the *Love-waves* threw his pickup and everything else about and back and forth, like a carnival ride. “Wow. There’s a car being shook off the freeway.” He stepped hard on the accelerator and swerved to miss the Lincoln rolling down the embankment.

Chris ignored the flash of an explosion in his rearview mirror. “I’ve got to check my instruments. I’ve got to make sure they get all the data.”

Some energy converted into *Rayleigh-waves*, surface waves that rolled the soil up, around and down like an ocean swell coming onto a beach, about to become a breaker. When people spoke of seeing the earth moving like waves of the ocean, they described the *Rayleigh-waves*.

Chris’s hurtling pickup reached the Interstate just as the road rolled up in a swell and the southbound lanes of the freeway overpass lifted. The land jerked eight inches north, yanking the short cable anchors from the southern abutment. The huge block of concrete fell, missing its south support, hurtling towards the pavement below.

Chris stared ahead at the substation where he had placed his instruments. “Oh God, the transformers are sparking all over the place. Come on, truck. Go. Go. Go.” Chris sensed a shadow as he sped beneath the Interstate, quick but not quick enough. The collapsing concrete overpass crushed the pickup into the asphalt of Stateline Road.

At 9:34:35.8 Central Daylight Time, Chris Nelson became one of the first victims of the New Simon Earthquake.

For 12 seconds Nasty's café withstood the wrenching vibrations, and then it began its total collapse to the ground. Tina scrambled from under the booth, looking for an escape route.

The old wooden structure rested on a concrete slab, its walls unbolted to the slab. The foundation bounced them up and moved out from under them, ripping apart all the piping for water and gas.

Unsecured objects like the water heaters, coffee pots, stoves, and ovens slid over the concrete floor ripping their power cords and pipe connections from the wall, tumbling over when their base hit something that got in the way.

Several large beams constructed from discarded telephone poles supported the roof of the café. The poles balanced on unsecured pillars. As the pillars moved to the side, the roof caved into the center of the building. Tina ducked into the coffee station, crouching under the workbench.

Plates, glasses, utensils, and menus flew into the air then to the floor. The garlic odor of escaping gas filled the room. Tina scrambled from her temporary shelter and raced for the side door.

The base of tall objects such as trees, power poles, and supports for the fueling shed whipped back and forth at speeds exceeding 80 centimeters per second—two miles per hour, less than a moderate walking speed—but the earth moved in a different direction every quarter second. Just as the top of an object caught up with its meandering base, the base turned and went some other way.

Trees standing close together became tangled in their tops, adding to their distress. The brutalizing actions bent then snapped all the larger trees and power poles in the area within a few oscillations. Overhead power lines whipped back and forth, yanking insulators from the supports and crossing wires with great displays of sparks and broken lines. Telephone and electric power lines, some still sizzling, flew about until most lay about the ground.

One of the power lines flying through the air landed across the roof of the café and shorted to the metal base of the sign at the front door, igniting the escaping gas.

The café blew apart in a huge ball of flame.

Tina stumbled through the screen door just as the explosion blew the entire wall into the parking lot. Pieces of the exploding building crashed down around her. The screen doorframe fell across her legs.

The blast torched the cook, two dogs, and a trucker. Tina could hear their screams competing with the sounds of breaking trees and roaring earth.

She sobbed, unable to move as they cried of their horrible death in the flames. The fire in the café grew from the supply of broken kindling scattered throughout the area. Flame and black smoke boiled into the air from the shaking coals.

North in Missouri at T+6.5 seconds, the same destructive scene as in New Simon played out in the small farm communities of Holland, Cooter, and Steele as the shaking swept through those towns half a second after it began in New Simon.

Gary Lincoln walked along the railroad track on the south side of town, next to Polk Street, wishing. “Sure wish I had an old railroad spike. Sure wish a train would come. Sure wish they had an arcade here in Steele.”

He looked for any piece of old treasure that might interest a ten-year-old. The sun shined warm on his shirt. His dog, Rusty, beat through the weeds, hoping to scare up a cat or cottontail or any life form to chase. Gary’s folks had begun fixing the old house they would move into, and Gary had been left to fend for himself, just so long as he did it somewhere else.

Looking down the tracks, “I wish a train would come this way. I wonder if Daddy’s right. But he said if the tracks were slick, and that means there’s a train.” Gary hoped it would happen soon. He’d never lived close to a railroad track before, and it would be exciting to see a train go by.

He turned over an old can. “Now I hear it. It’s roaring down the track. The railroad ties are vibrating, too.” He looked to the south, but saw nothing. He whirled around. “Where’s the train? I hear it, but I don’t see it.”

Rusty barked, bounding onto the railroad right-of-way. Gary turned to the dog, “What, Rusty? Do you see the train?”

The railroad ties beneath his feet jerked northward, tripping him. Gary grabbed his dog’s neck and dropped to his knees. The gravel of the roadbed dug into his kneecaps as the ground accelerated and then snapped back.

“Ouch. That hurts.” Pained from the gravel gouging his knees, Gary sat down, still hanging onto his dog. He sat between the two rails. “No, no, train. Don’t come now. You’ll run over me.”

Rusty kept barking, trying to break free, but Gary hung onto his collar and neck for dear life. The old house across Polk Street vibrated from side to side, skipping across its yard, crushing the roses planted next to it.

Gary hung onto one of the steel rails until he looked south back along the track and saw the rails bending from one side to the other, coming like a snake in his direction. They started lifting like someone cracking a whip.

As soon as he realized how they were moving, the rails and ground upon which he sat began the same motions, throwing him from side to side and up and down, then out from between the rails. He wrapped both arms around his dog and buried his eyes into the canine's fur.

When he peeked out he saw where the two rails had spread apart and tore ties from the ground, throwing railroad spikes into the air. "Now I'll find some spikes." The rails next to him again vibrated and jumped, almost with a life of their own.

To Gary it seemed like forever, though the shaking diminished over the next 28 seconds. Then it accelerated as waves reflected from the mantle coursed through the town. Though not so strong as the initial blast, they continued for twice as long.

At last the shaking stopped, though Gary's body still twitched. He lay on his side in the ditch beside the rails, sobbing from the adrenaline coursing through his body, still clutching the dog in his arms, covered with dirt and grit. Where his skin had touched the ground, it felt like fire and looked scratched raw, as if he had been drug across a field on the end of a rope.

Gary sat up and looked around, sobbing, "What happened, Rusty? Everything's different." He sat beside the rails, but they had been torn from the ground and bent all around. Pieces of railroad ties propped up part of the track or just lay askew. No train would ever travel these tracks again. The right-of-way by which he sat showed large cracks and in places it had sunk into the ditch alongside. "The train track's all broke."

He stared across the road at the house he had seen walking across its lawn, now a pile of broken lumber. An old woman struggled to pull up one side of a wall calling for her cat.

Gary remembered his parents at work on their new house. "Does our house look like that now?" Gary scrambled to his feet and pulling Rusty along, ran crying back alongside the tracks toward his parents and their new home. "Mommy. Daddy. Mommy."

At T+6.7 seconds, to the south in Blytheville, the train that Gary expected, the next train up the line, transitioned through the switch from the east-west sidings in the industrial section of Blytheville onto the main line.

The train had begun with 17 cars from the Osceola Landing destined for several cities to the west. Following them was the standard collection of 30 tanker cars and nondescript boxcars retrieved from the Gosnell Aeroplex staging dock, all labeled with various defunct rail companies and tagged by graffiti hounds.

In their midst were three hazardous materials tankers carrying toxic chemicals to Minneapolis from a plant in southern Louisiana, so dangerous that the state of Louisiana refused permission for them to be hauled overland. They were shipped up the Mississippi by barge to Osceola for transfer to rail in Arkansas.

Two Burlington Northern diesel engines towed the collection of 47 cars.

The voice on the radiophone told Ben Smothers, the engineer, "You've got the all clear through to Hayti." He pushed the throttle forward to hurry the line of cars out onto the main line. Half of the train pointed east and west and half north when the *S-wave* began rocking the train north to south. At first Ben thought an engine had blown. Then he saw the drive wheels slipping on the steel rails.

He looked back at the rear of the train coming onto the main line. To his horror he saw several cars tilt, then fall to their side, including the three haz-mat cars with their red flags.

"Jerry, the train's derailing. Emergency stop, NOW." He pulled the throttle back as his assistant pushed all brake controls full on, locking the airbrakes of every car on the train.

The train tore apart. Cars moving east rocked off the tracks, uncoupling from the rest of the train. As the *Love-waves* jerked the northbound section of the train east and west, cars remaining with the engine left the rails. The warping and tearing of the rails from the right-of-way added to the chaos, leaving the engines standing upright but without a path for locomotion.

The train reached a complete stop in 15 seconds. The engines dropped their high-pitched exhaust and then Ben could sense the sounds, shaking and rocking of the earthquake.

"Call Central Switching and tell them we're having an earthquake and the train's derailed. I'm going back to check the haz-mat cars." Ben clambered down from the rocking engine and ran towards the rear of the train, his 285-pound frame stumbling over the heaving ground. His concerns grew when he saw clouds of gas spew from the red-flagged cars. The shaking hobbled him and slowed his speed.

In the distance he saw workers streaming from a factory next to the tracks. They stood around in the parking lot and held onto whatever they could find that might be stable. Their factory building rocked back and forth, losing portions of its exterior every time the earth moved in a different direction.

Some workers pointed towards the gas coming from the cars, and a few wandered towards the cloud. "No, No. Get Back." Ben yelled at the top

of his lungs, trudging along at his best speed. The cloud spread, and it blew towards the crowd in the parking lot. "Watch out for the gas," he called, hoping someone would hear his warning.

As the cloud drifted across the fence, the workers nearest the broken cars threw up their arms and fell to the pavement. Other evacuees from the factory called to their fellows, pointing out the approaching danger. The crowd turned as a group, and seeing the cloud bearing down on them, turned again and ran up the road towards the center of town. The gas cloud followed them, sweeping along like the grim reaper.

Ben stopped, his head sagging. "Oh, my chest. It's hurting too much. I can't move. Oh, shit." He brought his right hand over his heart and leaned his left hand on the wheel of one of the cars.

Looking up he watched the cloud move over the factory building to the other side as the pain swelled in his chest. His breath became shallow and a cold sweat broke across his face. Clutching his left arm he collapsed onto the gravel beside his train.