

Chapter One

Lilia

I am Lilia Andruschchenko, fifty years old, a heart surgeon at the Ohmatdyt Children's Hospital in Kyiv. As directing physician in the Children's Cardiology and Cardio-Surgery Center, my job is to keep those little hearts beating, so that a sick child might one day be able to go outside and play with healthy children in the sunshine.

In February of 2022, I was working at the hospital—a modern, well-equipped facility with an excellent staff—when Russian military forces invaded my country and tried to capture Kyiv, the capital city of Ukraine. Because of the shelling and bombing throughout the city, we set up beds in the basement of the hospital and moved the children to where we hoped they would be safe. Our children's hospital soon became a war hospital, for we took in patients of all ages: people with shrapnel wounds, people with bomb concussion wounds, people who had been buried in rubble, people who had been shot by snipers.

The sudden transition in my life was not only professional, but also personal. I am married to a wonderful man; together we have two grown children, a daughter of twenty and a son of eighteen. (Because of my career, I did not have my first child until I was thirty. The second at thirty-two.) In January of 2022, when we celebrated Orthodox Christmas, we were a normal, flourishing family in Ukraine.

My husband, Valeriy, was a journalist and editor-in-chief at a prominent newspaper, as well as a professor of journalism at the Taras Shevchenko National University of Kyiv. He tells his students that above all, they must research the subject until they find “the truth,” and then write about the gathered facts with clarity and courage.

My daughter, Larysa, named after my mother who lives with us, was a medical student at the University. Since she was a little girl, she has wanted to be a doctor, just like her mother. Her mother is deeply grateful and deeply proud.

My son, Krystiyan, still in high school, was (and is) a fervent apostle of Greta Thunberg in Sweden, absolutely determined “to cleanse the Earth from the scourge of oil” (Krystiyan has the soul of a poet) “so that the wheat fields of Ukraine shall forever flourish.” He organized a Fridays For Future group at his

school, and is always the most forceful speaker (I have heard him) at their demonstrations.

My mother, Larysa, was born in April of 1945, just before the war ended. She was eight years old when Stalin died in 1953, and she can still remember the strange atmosphere in her family: something of enormous importance had happened in the big country next door. She was eighteen years old when Nikita Khrushchev shook his nuclear fist at the American president . . . and the American president shook *his* nuclear fist back at Khrushchev . . . until the Soviet Union removed its missiles from Cuba.

My mother can remember Hungary in 1956, Czechoslovakia in 1968, Afghanistan in 1979, Solidarnosc in Poland in 1981 (I was nine years old and clearly remember pictures of the red and white flag waving over huge crowds). And of course, my mother remembers the opening of the Wall in Berlin in 1989. (I was seventeen, watching country after country in Eastern Europe declare its independence . . . until we did too, on December 1, 1991.)

From the year 988, when Vladimir the Great brought Christianity to Kyiv, to Independence at last, in 1991, a thousand years later: *that* was the turbulent history on which I stood as a teenage girl of seventeen.

Today, in June of 2022, when Ukraine is once again under siege, my mother, seventy-seven years old, “Larysa the Cossack” as she calls herself, refuses to get on a train and head west to the safety of some country under the protection of NATO. She will stand her ground, as she tells me, “with a kitchen knife, if necessary.”

Yes, on Orthodox Christmas in January of 2022, we were a normal, vibrant, hopeful Ukrainian family. Today, we have all put on the uniform of resistance. My husband works day and night with a delegation from the European Union who are investigating potential war crimes in Ukraine. Valeriy saw the bodies on the streets of Bucha. He is gathering the facts; he is gathering the evidence. He will help to tell the truth.

Krystiyan is fighting in the eastern regions of Ukraine (his exact location remains a secret, even from his mother) where he and his fellow volunteers fire an American Howitzer toward kids his age, who are firing at him.

Larysa, the medical student who loved to listen through her stethoscope to somebody's heart (she practiced on her entire family) is now one of a substantial number of female snipers who move with infantry wherever they are needed.

Yes, this is a part of the Ukrainian reality today. Our young women do not organize conferences about equal rights or a "glass ceiling"; our young women put the crosshairs of the scope on the chest of the target and pull the trigger.

Her grandmother is very proud.

And me, I am still the chief physician at the Children's Cardiology and Cardio-Surgery Center, maintaining a heavy schedule despite my exhaustion, trying to keep my thoughts clear and focused despite my outrage.

I have, however, begun to do something which I had once done in grade school, and then in high school, and at the university, until the intensive demands of a medical education and the growing number of hours on the wards of a hospital forced me to put away my notebook and pen. My adolescent poems came to a halt.

But with my husband gone most days and nights, and with both my daughter and son somewhere in a war zone, from which they may or may not come home, I began to lay awake at night thinking and thinking and thinking . . . until I got out of bed and went into the kitchen and turned on the light and opened one of Larysa's notebooks—nearly empty, with lecture notes from January and February on the first few pages—and began to write a poem.

My mother saw the light on, got out of bed, came into the kitchen and asked me, "Are you all right?"

My pen poised over a half-written line, I was a bit irritated at the interruption, but I told her with a calm voice, "I'm writing a poem."

"Ah," she said with full understanding. "It's about time. I still have," she gestured toward her bedroom, "all of your schoolgirl poems, safe in a cabinet."

She had always encouraged me. Despite the restrictions at school, she insisted that I write in Ukrainian, never in Russian.

She made a cup of tea for me, then went back to bed.

I understood that I needed a quiet place to write, and was drawn instinctively to a place where my mother had taken me many times as a child, Saint Sophia Cathedral, in the heart of Kyiv. The cornerstone had been laid by Vladimir the Great in the year 1011, "one hundred and fifty-two years," as my mother liked to say, "before the cornerstone of Notre Dame Cathedral in Paris was laid in 1163."

Because of the Cathedral's complex history, which has led to a battle between the Ukrainian Orthodox Church and the Ukrainian Greek Catholic Church, a remnant of Polish rule—and various factions within those two denominations—as to whom the Cathedral belongs, the ancient edifice is now a museum. There are no regular services. Before the war, most of the visitors were tourists who were intrigued by the abundance of mosaics and frescos which adorned the walls and arches and domes soon after the building was constructed, and are thus nearly a thousand years old. Today, with artillery roaring in the distance and bombs crashing randomly around the city day and night, the tourists are gone, but the parishioners have returned, in need of a quiet place where they can say a desperate prayer.

I managed to find a shop where I could buy a notebook—I returned Larysa's notebook to her desk in her bedroom—and even managed to find a simple aluminum folding chair, the sort of chair one might take on a picnic, so that I would have a place to sit while I wrote—as I hoped—a poem. The museum had no chairs for the public. But the curator knew me, for I had attended to her child some years ago, and I thought she would not mind if I sat in some obscure corner beside an ancient fresco of a saint, and penned my thoughts about our embattled world today.

With my notebook in an old leather satchel in one hand, and the folded blue chair in the other, I stepped out the door of the Children's Cardiology Center at the end of a twelve-hour shift, and felt the cool fresh air on my face—the delightful air of springtime in early May—very pleasant after hours in the damp basement where many children breathed the poorly circulated air.

I was exhausted, but I was also determined that I would at least make this first trip to a sanctuary within the city, greet the guards, set up my chair, and write perhaps nothing more than “I am here,” with a notation of place, date, and time. That would be a start.

The Cathedral was about three and a half kilometers from the hospital. I traveled by bus—they were running again, now that the Russian Horde had given up their siege and moved into the eastern parts of the country—for about half an hour. Yes, some remnants of normal life still remained, here in our bizarre war zone.

I walked from the bus stop toward the white Cathedral with its green and gold cupolas, and felt, despite my tiredness, a measure of peace. By good fortune,

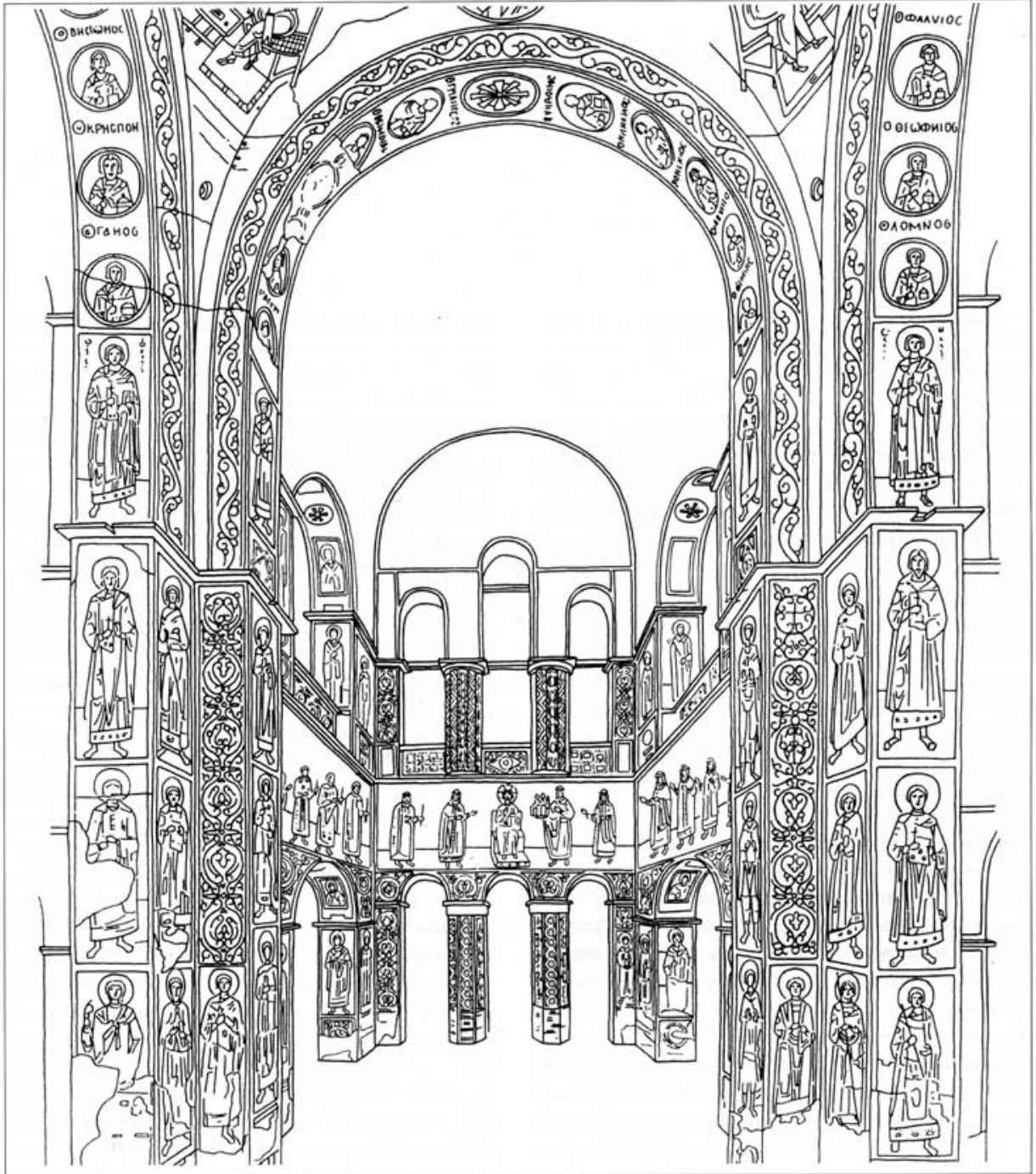
I met a guard inside the door who knew me and who readily told me that I was welcome to sit in my chair wherever I wished.

“We know about your work at the hospital,” she said with a quiet smile. “One day,” she pointed up at a faded fresco, “we will paint your picture up there with the saints.”

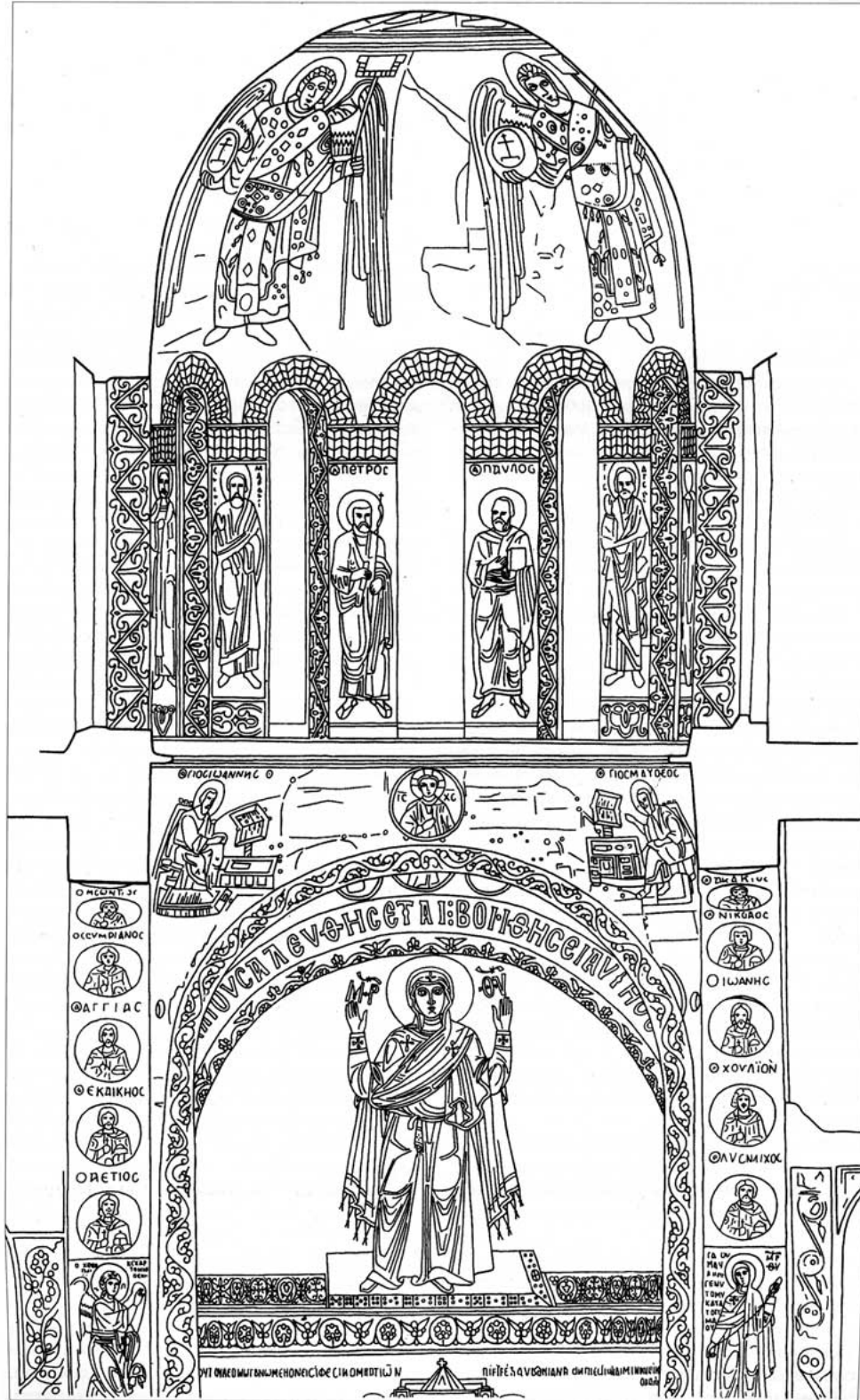
I laughed—a quiet smile, a quiet laugh, the most we could muster during wartime—and told her, “Paint the children. My dear little angels.”



Saint Sophia Cathedral
Kyiv, Ukraine



Interior of Saint Sophia Cathedral



Interior of Saint Sophia Cathedral
with the Virgin Mary, saints and angels.

I followed the long hallway between pillars and arches and alcoves to the central hall beneath the great dome, where I peered straight up at a mosaic of Christ looking down at me, blessing me with two fingers. He looked old and weary; I felt old and weary. I was in good company.

I lowered my gaze to the Virgin Mary, beneath an arch below the dome, her open hands spread toward me as she bestowed her abundant blessing. She wore a golden shawl crisscrossed over her ample blue robe, as befit the Mother of God.

My own mother had pointed out to me, when I was a girl, the embroidered white handkerchief which was folded over Mary's belt. "She uses that handkerchief," my mother explained, "to wipe away our tears when we come to visit her."

How many tears, how many Ukrainian tears of grief, during the past thousand years?

As always, I stared up at Mary's dark eyes, fashioned in the Byzantine style—for the architects and artists had come from Constantinople all those years ago—strong eyes which stared steadfastly with enduring faith. She had seen it all, during those brief thirty-three years which had ended with her son nailed to a cross, and during all the years since, when his message of peace seemed to have been blown away in the wind.

I looked at the faces of a few favorite saints on the walls and flat-sided pillars around me, old friends who had heard the roar of artillery before, many times, many times.

Then I looked up at two figures above the arch that wrapped over Mary. To the left was the Evangelist John, seated on a chair and writing with his pen on a piece of parchment. To the right was the Evangelist Mark, seated on a chair and holding a piece of parchment, with all of his writing implements spread on a table beside him.

Encouraged by these two writers, I found a spot where I would not disturb the few other people who moved quietly around me in our shared sanctuary. I opened the blue chair, sat down in the protective embrace of Mother Ukraine, felt a deepening peace within me, opened the leather satchel and took out the notebook (my own piece of parchment), took a pen from the pocket of my blue hospital shirt—the same pen which I had used to write wound descriptions and surgical reports throughout the day—and then I paused to listen for whatever words might speak to me.

They came, brutal and honest. They spoke of a thousand years of invasion, conquest, massive murders, transport in cattle cars to gulags in Siberia, Nazi firing squads, torture in prisons, carefully planned starvation, the surging of armies, the shooting of prisoners, the bombing of hospitals, the bombing of schools, the land mines left in gardens, in playgrounds, in fields where wheat is grown . . . and of the people who again and again had to fight back, with Howitzers, with crosshairs on the chest of the enemy. Everyone's knife, everyone's knife, was red with blood.

Who?

Tell me, where in the Sacred Book does it say:

“Thou shalt kill each other in war after war after war,
Generation after generation,
Century after century,
Millennium after millennium,
Until the Earth, Cradle of Life,
Becomes a Coffin of Death.

Behold, thou shalt slaughter and cripple and starve each other,
Unto the last day of human time.”

Who has spoken this commandment?

Us.

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Chapter Four

Larysa

She was extremely skilled at moving forward like a cat in the night, as if her training had awakened her instincts. She was not herself in 2022, but someone from ninety years ago, almost a century, when the Russians had starved her people. She was a mother who had listened to her children wail with hunger. She was a farmer's wife who had watched young soldiers taunt her husband as a "kulak," a rich capitalist, before they marched him away from their meager farm, forever.

"Holodomor," she thought, speaking silently not from her mind, not from her heart, but from her soul.

"Gulag," she thought, raising the rifle to her shoulder, looking through the scope and putting the crosshairs on yet another Russian, almost a century later. She waited until he paused in the first faint glow of dawn—a young soldier, certainly no older than she was—to pee beside his tank, and then she pulled the trigger.

His cry was brief as he collapsed.

She withdrew deeper into the trees.

* * *

Yes, she knew, in her camouflage and sturdy military boots, how to stalk, how to wait, how to kill. But she also knew, deep in her soul, that all of life was sacred. Her grandmother had taught her that. Every time she took the life of one of those poor boys—sent by the runt in the Kremlin to do his dirty work—she knew that what she had done was horribly wrong.

But the sin of war was so much a part of life. Especially if you lived next door to the worst neighbor in the world. They came in 2014 to take Crimea. They stayed to steal the southeast corner of her country, as if Putin had the right to piss wherever he wanted.

On patrol, her instincts directed her every step. She had taken the lives of seventeen young men. She had defended her country, as her people had done for over a thousand years.

But in bed at night—in an abandoned farm house, in the basement beneath a destroyed apartment building, in the dusty wreckage of a school, in a cave dug into the earth—in bed at night when she could not sleep, she searched and searched for some better way than holding the crosshairs steady while she pulled the trigger.

Yes, she would study to become a doctor, so she could help the children as her mother helped the children. But that didn't stop the jets from bombing the hospitals.

Her mother loved to visit the ancient cathedral, but what had that cathedral done to stop the wars?

And if tomorrow she was killed? One less doctor, one less daughter, one less "Princess" for her grandmother to love.

But the madness would continue, unabated. Because that's the way it's always been.

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Chapter Five

Krystiyan

Every day he was afraid that he would be killed before he could do the work he was born to do. If there was anything good about this utterly insane war, it was the opportunity, when peace finally came, to rebuild Ukraine as one of the first countries in the world powered entirely by the sun and the wind.

Who else was going to do the job? No more Russian oil, no more Russian gas, which they could now shut off whenever they wanted to teach us a lesson. After the war, once the rubble—and the bodies buried in the rubble—were cleared, every new building was going to have solar panels on the roof, just like in Germany. Every school, every hospital, every high-tech modern factory, every new apartment building, and every new home in the little towns . . . was going to harvest the sun.

The sun would be supplemented by wind turbines along the coast of the Black Sea, and out in the sea itself, sending power into the national grid.

And the grid—ahhh, here was the beauty of it—Ukraine’s grid would connect with the global grid, so that Ukrainian wheat, in abundance, and Ukrainian electricity, in abundance, could feed and power the world. *That* was being a good neighbor.

That was the handshake of peace.

But here he was with a squad of artillery gunners, firing shells at enemy troops who occupied Ukrainian land, while those troops fired shells at Ukrainian troops who threatened the historic Russian empire. For that nonsense he could be suddenly dead within the next five minutes. Before he had planned the national grid. Before he had surveyed the offshore bottom for suitable wind farm sites. Before he had put solar panels on the roof of his mother’s hospital.

Before he had gone to a good university where he could learn how to wire his ancient country into the 21st Century.

He was just an eighteen-year-old teenager, who wanted to spend the next fifty years building one of the most innovative and prosperous and exuberant nations on planet Earth. Because after centuries of brutes and barbarians who had bludgeoned and plundered his people, their time had finally come.

The Ukrainian spirit had survived every invasion, every war, every famine, every pogrom, every book burning, every deportation, every firing squad, every massacre. And now that spirit, like a vast field of wheat in the summer sunshine, would stand up and flourish.

He would devote his life to making that miracle happen.

Unless five minutes from now, he was suddenly dead.

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Chapter Twenty-Seven

The Melting Arctic Ice Cap

They settled into antique chairs in the family room and were quiet for a while, enjoying home-baked scones and peppermint tea.

Then Alistair looked at Larysa with his cordial blue eyes and said, “Larysa, Rose tells us that you are interested in protecting the Arctic.”

She took a deep breath. Were they asking her to take on this overwhelmingly huge project? She, who could not yet protect one square meter of Ukraine.

She said, looking at Alistair, and at Elspeth, then at Rose, “Yes, I would like to work with a team of scientists and indigenous peoples and lawyers to develop new laws that work in harmony with nature’s laws.” She paused, then added, “I have come to understand, from my preliminary reading, that conditions in the Arctic affect the entire northern hemisphere of the planet.”

“Correct,” said Alistair. “The Arctic determines whether we live on a healthy green planet, or an overheated and very different planet. As the Arctic ice cap melts—as it diminishes in size year by year—so our chances for survival diminish. That cap of ice has been with us since we first learned to build fires in Africa.”

He looked at Larysa with eyes not hard with anger, nor weak with despair, but with the firm, determined eyes of a scientist speaking the truth.

“Why is the Arctic ice cap so important? Because it reflects sunlight. The white ice and snow reflect about 90% of the sun’s energy back into the sky. But as the ice cap melts—because the warming Arctic Ocean melts it from underneath—the shrinking cap of ice reveals more and more open dark water. And that dark water *absorbs* about 90% of the sunlight, and thus it becomes warmer.”

He paused, as if to enable everyone in a conference audience, everyone in a classroom, to consider for a moment that simple process.

“As the Arctic ice cap shrinks, the Arctic Ocean becomes warmer and warmer. The warming water melts the underside surface of the ice . . . at an accelerating rate. The more the ice shrinks, the more the water warms, and the more the water warms, the more the ice shrinks. This feedback loop is exactly what is happening today.”

Alistair held up one finger. “That is step one.”

He held up two fingers. “Now comes step two. The winds that blow over the warming water pick up some of that extra heat. Part of the heat rises up into the upper atmosphere, where it affects the jet streams. And part of the heat is carried by the winds to the land—the Arctic tundra—which wraps around the Arctic Ocean.

“The warming ocean warms the winds, the warming winds warm the vast areas of tundra—in Siberia, Alaska, northern Canada, and northern Scandinavia—and the warming tundra warms the sheet of ancient ice just below the surface of the tundra.

“That sheet of ice and frozen earth is called the permafrost, a remnant of the last ice age. For the past twelve thousand years, since the melting of the enormous glaciers at the end of the ice age, the permafrost has remained frozen because it has been insulated by the layer of tundra on top of it. But now as the tundra warms, the permafrost is thawing. It becomes rotten ice.”

Alistair shrugged. “But who cares about rotten ice out in the middle of the Siberian tundra? That’s not our problem. Everything here on Market Street is just fine.”

He held up three fingers. “Now comes step three. Trapped beneath the permafrost—that sheet of hard ice which has been with us for twelve thousand years—is an unknown quantity of two gasses: carbon dioxide and methane. Before the last ice age, when the top of the planet was slowly cooling, the prairies of grass, and the forests of trees, and the woolly mammoths that lived in the far north, were slowly dying. The dead organic matter was eaten by bacteria, which gave off those two gasses, carbon dioxide and methane, during the process of decomposition.

“In that slowly cooling world, creatures died. Plants died. Bacteria flourished. And then the first layer of ice at the beginning of the ice age trapped all of that gas from organic decomposition. The CO₂ and the CH₄ were covered by a lid of solid ice . . . until now.”

Alistair held up four fingers.

“Now comes step four. The hard sheet of permafrost becomes rotten ice. The two gasses begin to seep up through the permeable ice. They rise into the atmosphere, adding to the blanket of greenhouse gasses. The thickening blanket traps more of the sun’s heat, warming the planet. The oceans absorb 93% of that extra heat. Ocean currents carry the heat around the world, in shallow water and in

deep water. Some of the currents carry the increasing amounts of heat to the Arctic, where the heat melts the Arctic ice cap . . . at an accelerating rate.

“The permafrost continues to thaw, increasing amounts of CO₂ and methane rise into the atmosphere, and the blanket becomes thicker and thicker.”

He held up five fingers. “Step five.”

He stared at Larysa with eyes that burned with fear, that burned with outrage.

“At some point—the tipping point—the permafrost becomes so rotten that planetary amounts of the two greenhouse gasses are released into the atmosphere . . . and planet Earth becomes an entirely different planet.”

He folded his fingers into a fist and thumped his fist on the arm of his chair.

“There will be nothing, absolutely *nothing*, which we people can do to stop a rapid increase in global temperatures. We will be utterly helpless while the oven gets hotter and hotter. We will have caused—willfully and knowingly caused—the extinction of a major portion of life on planet Earth.”

“Do you know,” asked Larysa, needing to know the truth, “how close we are to that tipping point?”

Alistair held up his finger and thumb, almost touching. “We are within a quarter-inch. It could have happened during this past summer, while we were busy fighting yet another war. It could well happen next summer, in July or August, in the eastern regions of Siberia, where year after year, temperatures are the highest. Putin is building his empire down in the southwest corner of Russia, while northern Siberia is about to release something more powerful than a nuclear bomb.”

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