



A NOVEL BASED ON THE LIFE OF
LAURA BASSI

M
THE
MENTORIS
PROJECT

BREAKING BARRIERS

Jule Selbo

Part One: Genoa

BOLOGNA
CITY IN THE PAPAL STATES
ITALIAN PENINSULA
1716–1728

Chapter One

Laura Maria Caterina Bassi tried to step lightly. She didn't want her mother or any of the other women in the parlor to look up from their needlework to ask her where she was going. She was glad her new soft, leather-soled shoes—given to her yesterday on her fifth birthday—made no sound. And that her blue silk dress, with its stiff petticoats, could be pressed to her sides to muffle the rustling crinoline. Luckily, her mother and the hostess—one of Bologna's most renowned, the imperious and beautiful Signora Mucchi—were gossiping and nibbling on *panaforte*, the chewy fruit and nut confection that her mother could not resist. Laura slipped past the parlor door and raced down the long, wide hallway.

She reached the library and peeked in. She could glimpse Count Luigi Marsili's tall form, his wide chin, and his bulbous, piercing eyes. He wore a shoulder-length periwig of cascading black curls and a waistcoat adorned with military medals. His commanding voice filled the room.

“Gentlemen, *il mio uomo*. The University of Bologna, and especially its work in scientific study, is stagnating. Set in the old ways. Science cannot stand still!”

A number of the men nodded, some raising their hands. “*Ben detto! Ben detto!* Well said! *La scienza vive!*”

Laura leaned in. She liked that word: *science*. Her father told her it was the study of how everything in the whole world worked. She wanted to know more about this science.

Marsili spoke loudly, like he was rallying his troops for battle. “As you know, as of this year, 1716, I’ve retired from the Pope’s army and am now concentrating on work in geology and ocean science. But the university’s facilities are lacking and Bologna is suffering!”

Laura saw scowls. It was apparent not everyone agreed, that some resented his words.

A thin man with a humped back, his matted gray wig slipping to one side of his bony face, stood. “Do not speak ill of the oldest university on the Italian Peninsula! It ranks as one of the finest in Europe. Our city is called *La Dotta*, the city of ‘the learned.’”

Marsili’s voice rose. “And now resting on its reputation, Dottore Salti.” He forged ahead. “England and France are gaining. Will Bologna fade into the background?”

The supporters of Marsili shouted, “No! *Non per noi!*”

Marsili raised his hands high into the air. “I propose a new Institute of Science! And I offer my palazzo as its home.”

Marsili’s supporters, elated, stood on their feet. “*Bravo!*”

“We must study science the way it should be studied,” Marsili nearly shouted. “With resources! With an open mind!”

Laura felt the excitement in the room. Her eyes searched for her father—his well-tailored coat, linen shirt, and flowing red

wig. Finally, she located him . . . and cringed. For his gaze was not on Count Marsili; it was on her. Giuseppe Bassi's eyes sent a silent but strong message. *Daughter, do not think about entering. Go to where you are supposed to be.*

Laura, disappointed, slipped backwards. She disliked being told where she was “supposed to be”—she wanted to be where her curiosity led her. On the family's walk to the Mucchi palazzo, her father had told her he was most pleased to be invited to this evening's salon where important discoveries and ideas would be discussed. He'd been raised in a poor farming family, but had dared to move to the city, managed to get an education, and risen to become a well-respected, well-paid *avvocato*—a lawyer in Bologna. And even though these salons were exclusive and, for the most part, only for forward-thinking professors and nobles of fine families, his offer of financial support had been accepted and gained him this invitation. He had told Laura he hoped she would be on her best behavior.

Laura frowned. She wanted to behave, but she also wanted to be inside the library. To listen to every word.

Count Marsili held up his hands again for attention. “New ideas and new discoveries lead to a deeper understanding of the world. To this new and great period of Enlightenment.”

“Enlightenment? What is that?” one of the nobles asked.

Laura peeked in again, trying very hard not to be noticed. What was that new word?

“A time of reason. Of sensibility,” Marsili informed the men. “We all know that science was feared and squashed in the Dark Ages, then ignored and vilified in the more recent Reformation. But it's a new day, a new age. The French have given it the title ‘Age of Enlightenment.’ Where scientists will lead, they will experiment, they will show that God encourages us—wants us,

demands of us—to strive to understand the makeup of the world He has so generously provided. The Enlightenment—with Bologna leading—can be the era of great thinkers.”

Laura muttered the word under her breath. *Enlightenment*. It made her feel light and happy.

Marsili’s voice rang out. “Our fine city, Bologna, with a new Institute of Science, can and must become a center—in natural history, physics, chemistry, optics, astronomy, military art, anatomy, and more. Open your purses,” he urged. “Our new institute will need books. Laboratories. Instruments. Resources. Researchers. Bologna must be the most ‘enlightened’ city on the Italian Peninsula! In Europe!”

“Hear, hear! *Ben detto!*”

Laura felt a tug on the ribbons of her linen cap. She heard a worried whisper.

“Laura! We’re supposed to be in the sunroom.”

Laura turned to see her best friend, Eugenia Mucchi. Her dainty, pretty face, framed with the lace of her cap, was pink with worry. “My mother mustn’t see us. We’ll get in trouble.”

Laura put her small hands together, as if beseeching her friend. “One more minute.”

Dottore Salti, the grouchy-looking man with the worn gray wig, was growling. “These are very big dreams, Count Marsili.”

“Sì, Dottore Salti. But without dreams, how does human-kind move forward?”

Laura took a deep breath. She had many dreams—going to school, learning languages, history, literature, science. Learning everything.

Eugenia pulled at the sleeve of Laura’s dress. “Please, Laura. My mother will be angry.”

Laura frowned. She knew that to be true. Eugenia’s mother,

Signora Mucchi, expected perfection in manners and fashion. Laura dipped her head and saw specks of dirt on her knitted white stockings. They had been clean when she and her parents had left their home in the early afternoon to walk to the Mucchis' grand palazzo. She should have walked around the rain puddles that had formed in the lower areas of the Piazza Maggiore, but she liked to tap her foot against the water and count the ripples in the small pools.

Laura glanced at Eugenia's stockings; they were pink, clean, and perfectly tight. "I never want you to get in trouble, Eugenia," she assured her friend. "I'll race you."

The girls flitted past the tapestries, fine art, and statues that lined the hallway of the Mucchi palazzo. They crouched, then held their breath, scampered past the women's enclave, and slipped into a sunroom filled with toys.

A group of girls sat in a circle with embroidery hoops, pulling oversized needles and thick threads in and out of thin linen fabric, intent on fashioning flower designs. Eugenia went to join them, but Laura's attention was drawn to the other side of the room. A half-dozen boys flanked a long table; they eyed a line of miniature cast-iron carriages. The boys argued about how many carved wooden horses to place in front of each carriage.

Laura gazed at the configuration and mused aloud, "What if the carriages were all linked together and the front vehicle was an engine propelled by steam. The engine might be strong enough to pull all the carriages so the horses wouldn't have to do such hard work—they could eat hay all day."

"Steam can't do anything. That's just hot air," declared Vincenzo Cruce, an eight-year-old boy with a mass of freckles across his cheeks. He glowered at Laura.

Laura pursed her lips and pointed out in her small, calm

voice. “Steam can be used for power. My father told me there was a Greek named Hero, thousands of years ago, who put water in an almost-closed vessel, then put a flame under the vessel to heat the water. This created steam. This steam made the arms attached to the vessel turn—like a windmill.”

Vincenzo snorted. He did not like to be shown up.

Laura, oblivious to his irritation, continued. “And just yesterday, my father read to me about a man in England named Thomas Savery, who invented a water pump that’s propelled by steam. He heated water just like Hero did in Greece. And now the Englishman’s working on something he calls a steam engine. It’s meant to be strong enough to pull things.”

The boys stared at Laura; they were confused by this serious girl sharing odds bits of what seemed to be ludicrous information.

Eugenia approached. “Laura? I want to show you my new dolls.”

Laura turned to her friend. “We’re discussing steam, Eugenia.”

“No, we’re not,” Vincenzo snarled.

The boys quickly moved off to the other end of the table to set up war games with small wooden soldiers. Laura noticed they stood tightly together, leaving no room for her to join them.

Eugenia led the way to a row of shelves. “Laura, sometimes you think of strange things. Everyone knows a carriage will always need a horse to pull it.” She waved her hand at the shelves lined with beautiful porcelain dolls. “You pick your favorite and I’ll pick mine.”

Laura puffed out a long breath. Dolls. She would rather use her time to think of a way to invent a steam engine. Or something just as wonderful.



It was the end of the afternoon and Laura and her parents, wrapped in heavy velvet cloaks, walked the short distance to their home. The evening clouds were gathering and the promise of another chilly October rain was in the air. They crossed through Bologna's grand Piazza Maggiore and passed the city's most massive church, the Basilica di San Petronio, and the Fountain of Neptune, its flowing, spurting waters overseen by a giant statue of the Greek god of the sea.

Laura was full of questions. "Papà, what do you think about this thing called the Enlightenment? Will Bologna be part of it?"

"We shall have to see. Our new pope, Clement XI, appears to be open to new ideas. More so than our previous pope, who believed that man should accept God's gifts and not endeavor to understand them."

"Papà, do scientists have to obey the pope?"

Signora Bassi nearly gasped. Her right hand touched her forehead, heart, and both shoulders, making the Catholic sign of the cross. "God speaks through the pope, my daughter. And we must obey God."

Signor Bassi gently took his wife's arm and replied to Laura, "The pope is elected by men to be the spiritual leader, the head of our Church. He's charged with acting in the way he feels God would approve. But in Bologna, because we are part of the Papal States, the pope is also our political and temporal leader. He's in charge of decisions such as war, our trades, our economy. The university needs money to support study and to build laboratories. Many will be grateful if Pope Clement will promise funds to support scientists' work."

“God must see science as worthy,” Laura said. “It’s so obvious.”

Signor Bassi and his wife shared a look, again taken aback by their daughter’s precociousness. She had asked to learn to read when she was three years old, and had challenged herself in the family library. She wanted to know how things worked, what they were made of, where and how people in the world lived.

“Papà,” Laura continued, “Count Marsili said the Enlightenment is the time for great thinkers. How does a person become a great thinker?”

“The first requisite is to be a great questioner,” Signor Bassi said. “Asking questions opens a person to new ideas.”

“I like questions,” stated Laura. “And I like answers, too.”

The Bassis approached their large, stone villa. Suddenly, a great wind blustered and rain began to fall in large drops.

Signor Bassi, always prepared, opened an umbrella made from an oiled muslin. “Gather close for safety, my family.”

Laura saw Nucca, their round and solicitous housekeeper, standing in the open doorway. “There’s Nucca. Can I run, Mamma?”

“*Mia cara*, you’ll get wet,” Signora Bassi worried.

But Laura was already running. She bounded up the steps to the stone veranda and into their stately home.

Nucca clucked her tongue, “You’re not acting like a young lady, Signorina Laura.”

“Rain makes me wonder about clouds, Nucca. And the sky. It’s all part of science.” Laura skipped up the marble stairs to her bedroom.

“I’ll be up to help you out of those wet clothes, Signorina Laura,” Nucca called after her.

“*Grazie*, Nucca.”

Laura raced to the small desk in her room and quickly took out a thin piece of vellum. She unscrewed the lid on her inkpot and dipped a quill into the dark ink. She printed her letters carefully, trying to get the shape of each just right.

Salutations Pope Clement XI,

My name is Laura Maria Caterina Bassi. I am writing to tell you that I think science is wonderful and it seems to me that God must think so too. I hope He tells you that.

She folded the letter and put it into a drawer. She'd take it to the church; surely it could be sent it along to the pope.

A short time later, Nucca had helped Laura out of her cap, crinolines, stockings, chemise, and hair ribbons and into her linen nightdress and sleep bonnet. Laura climbed into bed and slipped her bare feet under the quilted cotton coverlet. She breathed in deeply.

"I can smell the lavender scent in my pillow, Nucca."

"It is for sweet dreams, *signorina*." Nucca moved the tallow candle to the bedside table.

Signor Bassi entered. He'd taken off his wig and Laura liked to see his thick, wavy reddish-brown hair.

"Papà, why do men wear wigs?"

"Fashion. Vanity. I think it became the style in Europe when the young king, Louis XIV of France, started losing his hair. He thought a wig made him look more handsome and powerful."

Laura giggled. "Do you like them, Papà?"

"They're hot and expensive. But it's important to fit in, I suppose. To do—and wear—what is expected." He patted Laura's hand. "Did you brush your teeth?"

“Sì, Papà. I crushed baked eggshells with sage and salt in Cook’s kitchen. Nucca rubbed the mixture on a cloth and I rubbed the cloth on my teeth myself. See?” Laura showed her teeth. “They feel clean.”

Signor Bassi nodded to Nucca. “*Grazie*, Nucca.” Nucca dipped in a short curtsy. “Signora Bassi could use your help now,” he added.

“*Buona notte*, Signorina Laura.” Nucca padded out of the room, her ample figure moving quickly.

Signor Bassi reached for the Bible. “What will it be tonight?”

“Genesis, Papà. When God created the Earth. It’s like He created science at the same time.”

Signor Bassi laughed, “You could be very right to think about it in this way.”

Just then, a bolt of lightning formed a ragged line in the sky. The room lit up for a moment, and Laura chortled with excitement.

“Papà!”

“Count for it, Laura.”

Before Laura could even begin to count, the thunder clap sounded. She could almost feel its power through her body.

“Papà, where does the lightning come from? And why does the bolt of light come first? Before the sound? And why does the sound come quickly sometimes and much later at other times?”

“Perhaps someday, scientists will be able to explain it.”

Laura yawned, her eyes closing. “Perhaps the scholars in the Enlightenment will come to understand the sky and the stars. And even go to the moon one day.”

Signor Bassi chuckled. “One day, *mia cara*. Perhaps one day.”

Sleepily, Laura mumbled, “Papà, when can I go to school?”

“Girls don’t go to school. They learn what they need to know right in their own homes.”

Laura was half asleep. “But I want to ask so many questions—so I can become ‘enlightened.’”

Chapter Two

On the last Sunday in June, Bologna celebrated with a mass in honor of one of its most beloved saints: Saint Caterina. Laura felt it was an extra-special day for her, too, because one of her middle names was Caterina. She sat between her mother and father; one of her cousins, Carlo, who was a few years older than her and loved to play pranks, sat behind them with his parents.

Carlo leaned forward and teased, "I've got a big spider in my hand . . . shall I let it crawl on your shoulder?"

Laura giggled as Carlo's father pulled him back and reprimanded him.

She saw her friend Eugenia in a straw hat topped with flowers, in the nobles' pews of the Basilica di San Petronio. Eugenia was twisting to wave happily to her. Signora Mucchi, her face stern, leaned into Eugenia and whispered. Laura could see Eugenia's face fall as she turned around and sat up as straight and perfectly still as possible.

“Benedictus Deus in donis suis, et sanctus in omnibus operibus suis”

Laura’s cousin, the recently ordained Father Lorenzo Stegani, his white and gold vestments catching the light that streamed through the stained-glass windows, moved to the pulpit to give the opening prayer. Laura loved the Latin language, its stately sounds, how when spoken in church it resonated in the large space and seemed to merge into one long word.

Unaware that her young voice was clear and strong, Laura recited the prayer along with her cousin. *“Qui vivit et regnat in saecula saeculorum”*

Nearby parishioners cleared their throats, signaling disapproval. Carlo, behind her, snickered.

Signora Bassi put a hand on Laura’s arm to caution her. She leaned to whisper into her daughter’s ear. “Pray softly, Laura.”

Laura dipped her head. “Sorry, Mamma. I forgot to stay quiet.”

But Laura was soon transfixed as Father Stegani told the story of Saint Caterina. Three hundred years ago, she had been the daughter of a lawyer, just like Laura. Caterina had loved learning, just like Laura. Caterina had founded a Franciscan convent in Bologna, a religious order of nuns she named the Poor Clares. The convent was a school and hospital, one of the first that was available to the poor. Laura felt pride in Caterina’s accomplishments for she, too, hoped to accomplish something just as fine one day. Maybe she, too, could be a teacher.

Father Stegani continued, telling the parishioners he was about to disclose miraculous events. Laura leaned forward.

He raised his bearded jaw and lifted his eyes toward heaven. “In the days after Abbess Caterina’s death, in 1463, many

people of Bologna prayed over her body. And, wondrously, sick people were cured of their ailments.”

The parishioners touched their foreheads, hearts, and both shoulders in the sign of the cross.

Father Stegani raised his voice. “The cured, awestruck, fell to their knees. When the leaders of the Church witnessed this, they wondered—could these events be connected to Caterina? It was decided to exhume her body.”

Laura could hear Carlo behind her, groaning in disgust.

“How long does it take to dig up a body, Papà?” Laura asked.

Her father put his finger to his lips. Laura frowned; she realized her voice, again, had been too loud.

Father Stegani continued, “The body of the Abbess had been buried for eighteen days. When it was taken from the ground, doctors were astounded to see that Caterina’s blood still flowed and sweet smells emanated from her body. And then, when the sick approached and touched the exhumed body—all were miraculously cured.”

Laura held her breath. The best was yet to come.

Father Stegani’s voice echoed in the massive stone church. “And then, a young novitiate of the Poor Clares’ order could not contain her grief. She called for Caterina’s expired body to join the living again, to sit up!” He paused theatrically before continuing. “The novitiate begged, ‘Sit up! Sit up!’ And the Abbess’s upper body rose and she sat up!”

Laura forgot her parents’ admonition to be quiet. She stood. “But how, cousin? How did that happen?”

Signora Bassi quickly pulled Laura back to her place in the pew. Her father pressed his lips together, not pleased.

Laura sighed and settled back in the pew. The hardest thing

about being in church was not being able to ask questions when she wanted answers.

After church, Laura stood by herself in the Piazza Maggiore, deep in thought. *How did Saint Caterina sit up after she was dead? Did her eyes open? Did she speak?* She had so many questions.

Other children played in groups—the girls skipped in circles and Carlo was with the boys who raced after each other, playing a game of tag. Laura’s parents socialized, catching up on the city’s news and gossip. The warm sun was high in the sky. Laura could feel the hard stones of the piazza through her soft leather shoes. She wondered why stones retained more heat than the dirt paths of the city. She wondered why Bologna favored the terracotta color for its buildings. Why did the red-orange hue make her feel soothed? She wondered why the sun, in the days of June, stayed high in the sky for a longer time than during the Christmas season.

Eugenia, out of breath from the skipping with the other girls, joined her and showed off her new dress. “Laura, look at the pearl buttons on my dress. Mamma says they come all the way from China. That’s a place far, far away.”

Laura remembered a story she’d read about China, a large country in the Far East that the Venetian explorer, Marco Polo, visited four hundred years ago. “Eugenia, did you know that China is the place where fireworks were invented? Fireworks shoot light and color into the sky.”

“Maybe we’ll sail on a magnificent and fancy ship and see China one day,” Eugenia dreamed. She touched her pearls. “To see pearls and fireworks.”

Signora Mucchi’s clipped, haughty voice rang through the air; it was time for Eugenia to get into the Mucchi’s grand carriage. Eugenia kissed Laura quickly on the cheek and skipped

toward a waiting groomsman. He offered Eugenia his hand and she daintily slipped into the carriage. Laura liked to walk, but Eugenia had told her that gilded carriages were signs of noble families and her mother thought it was important to make their status clear.

Laura saw Father Stegani join her parents. She hurried over and smiled up at him. “*Buongiorno*, Cousin. Has Pope Clement answered my letter yet?”

Father Stegani leaned down to Laura. “Not yet. I’ll let you know when there is a post for you. It was good to hear you join me in prayer in the church.”

Laura ducked her head, chastised. “I’m sorry for speaking aloud.”

“That I do not mind,” said Father Stegani. “But your Latin needs a bit of improvement. Pronunciation is very important in Latin.”

Laura frowned. She always wanted to get things right. “What did I mispronounce?”

“Just a few words,” Father Stegani said kindly. “How old are you now, Laura?”

“Almost six.”

“What if I teach you Latin? That way, when you do speak up, your meaning will be easily understood.”

“Really, Cousin?” exclaimed Laura. She rose to her toes in anticipation. Latin was the language used for great learning and only boys of noble families were tutored in Latin.

She looked up to her parents for their agreement. “*Papà e Mamma. Di di sì*. Say ‘yes.’”



Over the next year, Laura worked hard on her Latin lessons and soon her cousin decided to add French to her assignments. She practiced every day, following Nucca around the house and garden, stating the foreign names of objects. She learned songs and poems and wrote questions in her notebook for Father Stegani. She also anxiously awaited her father's return from the monthly salons of learning, for he would often bring back pamphlets written in French by Enlightenment scholars. She pored over the articles, but even though she could sound out the French words, she was frustrated because she could not understand their meanings.

One day, when winter had finally departed and the leaves on the trees were beginning to bud, Father Stegani arrived for a lesson. Laura met him at the gate to the villa.

"Cousin, the French Enlightenment mathematicians write of something called 'calculus' and I don't know what it is. Will you teach me?"

Father Stegani stepped back and chuckled. "Laura, I'm a theologian. I know only mathematical basics. Adding and subtracting. Simple multiplication."

Laura look stymied. "Multiplication? I don't know about that. Shall we start there?"

Father Stegani hesitated. He knew that young girls of Laura's station were expected to learn about concerns of home and family. Not mathematical problems. But Laura's face was so open and expectant, he did not want to disappoint.

He leaned into her. "I have an idea: Let's surprise your parents with multiplication skills when we think it's the right time. This will be our secret."

Laura's eyes lit up. She liked surprises.



The days turned toward summer and the warm sun encouraged Bologna's gardens; pink bougainvillea and red and creamy-white hibiscus bloomed. Bees darted from blossom to blossom and sparrows and warblers chirped in the trees. The stone streets and piazzas were filled with people enjoying the sun. The marketplaces abounded with vendors of fruits, vegetables, and meats; storefront doors were open to let in fresh air and allow the shoppers to see the fabrics, leathers, and fine wares on display. Laura, in a new felt hat decorated with red ribbon and bows, strolled through the city's main piazza with her father. They were out to shop for Signora Bassi's birthday present.

"Mamma will like a new hat, Papà. I think it should be very big and grand. But not too heavy. Because sometimes she gets tired."

Signor Bassi nodded; it was true, his wife, at times, felt a weakness. But he did not want to share his worries with his young daughter.

"We'll go to the best hat shop—it's over there."

Laura noticed a cluster of boys with school sashes over their cloaks; they followed a corpulent, jowly tutor who held a colored stick high in the air so that the boys could mark his place in the crowds. She felt envy; she wanted to follow them to their classrooms. She wondered what the boys might be learning—could it be calculus, a language like German, or astronomy?

"Signor Bassi." A deep voice thundered through the crowd.

Laura turned to see Count Luigi Marsili stride toward them. She was surprised by how much larger he seemed when he was close up, how his wig was shinier and heavier, and how his voice rumbled from his chest.

"I'll take this opportunity to thank you for your generous donation to the Institute of Science."

Signor Bassi gave a slight bow. “Not as generous as yours, Count Marsili. After all, you gave over your palazzo.” He nodded toward Laura. “My daughter.”

Laura bubbled with excitement. “I heard you speak at the salon at my friend Eugenia Mucchi’s home. You said that without dreams, humankind cannot move forward to the Enlightenment. I thought about that. And I have a question: Will the French thinkers ever come to Bologna? So people can think together?”

Marsili peered down at the diminutive Laura and then let his eyes sweep back to Signor Bassi—clearly ignoring Laura’s query.

“I have an appointment. *Scusami.*” The count, his heavy chin leading, strode off.

Laura frowned. “Why didn’t he answer my question, Papà?”

Signor Bassi found an excuse. “He’s an important, busy man.” He wanted to distract Laura. “Look. *Scacchi.*”

Laura looked to where her father was pointing. It was a jeweler’s storefront where two men sat at a small table in front of their open shop, concentrating on a board game.

“What is it?”

“Some call it ‘chess.’” Signor Bassi moved closer, and Laura followed. “I believe it originated a thousand years ago in the Far East—India or Persia.”

They watched the older gentleman, wearing a jeweler’s eyeglass around his neck, move a chess piece one square forward. His opponent, a young man wearing an embroidered yarmulke on his head, responded by moving a piece of his own.

Laura studied the game. “The board has sixty-four squares. And the colors of the squares alternate light and dark.” She did

the math in her head. “Papà, that’s thirty-two light squares and thirty-two dark squares.”

“That’s true.” He looked at her curiously. “How did you calculate so quickly?”

Laura, feigning innocence, shrugged. She was not going to give away the secret she and Father Stegani shared.

Their eyes moved back to the rapid play of the opponents. Signor Bassi did his best to explain.

“As you see, each player starts with sixteen pieces. One king, one queen, two towers, two bishops, two knights, and eight pawns. A player must use his pieces to protect his king at all costs.”

The older man moved a knight quickly on the board. Signor Bassi was impressed.

“Ah! See, Laura, he has trapped his son’s king—there is nowhere to move it for safety”

The jeweler knocked over the chess piece; the king lay on its side on the board.

“Ah, he has won the game,” said Signor Bassi.

“I would like to learn to play scacchi, Papà.”

The jeweler waved his hand as if Laura’s request was absurd. “Not for girls, not for girls.”

A crease formed in Laura’s forehead as her father led her away. “Girls live in this world, too, Papà. Why shouldn’t I want to learn?”

Signor Bassi kissed her cheek. “Of course you should. But now, let us go buy a big—but not too heavy—blue hat for your mother’s birthday.”



Laura placed the large present, tied with a pink ribbon, in the middle of the dining table. Father Stegani would be joining them, and Laura was helping Nucca set the table for dinner. Nucca kept an eye on where Laura placed the forks and spoons.

“Your mother will inspect the table, Laura. It’s the wife’s duty. Just as she writes the supper menu for me each morning. I tell the cook—for Cook cannot read—and Cook shops and then prepares the meal. Your mother checks in midday to make sure all is on schedule. You’ll do this when you are mistress of a home. It’s what a lady does.”

Laura nodded, but she wasn’t thinking of table settings. She was anticipating the surprise she and Father Stegani had planned before tonight’s birthday supper. She spied Father Stegani stride through the gates to their villa.

“There he is!”

“A young lady does not shout, *signorina*,” Nucca sighed.

But Laura was already calling to her parents to gather in the parlor. Signora Bassi, wrapped in a warm shawl, took a place on a chaise. The panaforte delicacies, put there to tempt her weak appetite, remained untouched beside her.

Signor Bassi poured himself a glass of fine wine and sat next to his wife. “What is this surprise you two have for us?”

Father Stegani lifted Laura so that she stood on a hard chair.

“Be careful, *mia cara*,” Signora Bassi warned.

Father Stegani gave a deep bow and announced that Signorina Laura Maria Caterina Bassi would like to share her latest studies. “Since she will be seven years old in just a few weeks, we have decided to concentrate on the number seven. My cousin will answer my questions first in Dante’s Italian, then in French, and then in Latin.”

Laura’s parents shared a look. *What questions?*

Father Stegani started with simple addition. “Seven plus twenty-five is—”

“Thirty-two.” Laura said. And then she added “*trente-deux*” and “*triginta duo*.” She grinned at her mother and explained, “That will be your age in seven years.”

Signora Bassi gave a light laugh. “Oh dear, don’t remind me.”

Father Stegani prompted, “Seven plus fifty-seven is—”

“Sixty-four,” Laura answered, again using the three languages. “That is a number two times larger than your age now, Papà.”

“And now,” Father Stegani announced, “the multiplication of seven.”

Using her three languages, Laura ran through the multiplication table up to the number twenty-five. She finished with a flourish.

“Seven times twenty-five is one-hundred and seventy-five. That is a large number, but it is not even close to a number that is called ‘infinity.’”

“Infinity?” Signora Bassi repeated. She pressed her hands together, anxious. “I’ve never heard that word. Is that a proper word for a young lady?”

Laura nodded. “It is, Mamma.” She turned to Father Stegani, who lifted a lesson board. Laura had drawn an image in chalk. It was an elongated numeral eight that rested on its side. “An Englishman named John Wallis designed this symbol for it.”



Laura clapped her hands in glee. “It’s a number that never

ever ends. It's part of mathematics. In French, it is called *infini*. In Latin, the word is *infinitum*."

Laura's parents were silent. They did not know of another girl in Bologna who was learning multiplication tables. They glanced at Father Stegani.

"Don't ask me anything more about infinity, I don't understand it," Father Stegani laughed. "Laura read about it in one of the pamphlets Giuseppe brought home from the salons."

Signor Bassi, guilty, avoided his wife's questioning gaze.

Father Stegani turned to Laura and applauded. "Well done, Cousin."

Laura hopped off the chair and curtsied. "Now we can eat." Laura took her mother's hand and led her into the dining room. "There's another surprise for you there, Mamma."

Father Stegani hung back to talk to Signor Bassi. "Giuseppe, you can see Laura is special. It would be a shame to not challenge her."

Signor Bassi sighed, worried. His daughter, indeed, was special.

The season's first snow swirled past the windows of the Bassi home. Laura, her lips pursed, sat on the window seat of her room. She was using her abacus to solve her latest mathematical problems. She moved the leaden balls on the wires stretched across the instrument's wooden frame and jotted her answers in her notebook.

"Laura?"

She looked up. Signor Bassi was standing in the doorway.

"Oh, Papà. I'm trying to prove this equation." She lifted

a pamphlet. “If I can figure out how it’s been solved, then I’ll understand more. But I might need a bigger abacus.”

“Already?” Signor Bassi laughed.

It was just last week that she and her father had visited Bologna’s newest shop, *Divertimenti*. He’d told her that the first of these shops had recently opened in London, where an Enlightenment scholar, John Locke, was advocating for educational toys for children. Signor Bassi told Laura, “Locke calls them ‘rational amusements’ because they’re meant to teach as well as entertain. He believes that the mind is a *tabula rasa*, a blank slate, to be written on by experience and learning.”

Laura had marveled at the toys in the shop, the puzzles that formed maps and geographical formations, blocks with letters of the alphabet on them, foldable papers to study shapes, and shelves of other toys. Her father had let her pick one and she had chosen the small, colorful abacus. “Mathematics are important to science, Papà,” she explained.

While her father had set up an account with the shopkeeper, Laura had spied the freckled Vincenzo Cruce entering the shop. He was with his friend, Alesso, a boy with a square face and large ears, who followed Vincenzo everywhere. They wore their school robes and sashes. She remembered trying to discuss steam engines with Vincenzo at Eugenia’s palazzo, and that he had questioned their veracity. In the store, he had turned to look at her and scowled, crossed his eyes, and stuck out his tongue. Laura, confused, had felt a stab of hurt. Why was he unkind? She had tried to put it out of her mind, but the moment still stung.

But now, it was Christmas Eve and her father was holding a sparkling crystal ornament. “Shall we put this in your mother’s basket while she is sleeping?”

Laura's face brightened. "*Sì, Papà.*"

They padded down the marble staircase and entered the library. Laura placed her mother's ornament in a basket near the fireplace. She noticed that in the center of the table, there was an odd shape covered with one of her mother's shawls.

"What is it, Papà?"

Signor Bassi pulled out a chair on which he had stacked two pillows. "This will be your chair."

Laura, curious, lodged herself on the pillows. Signor Bassi, building anticipation, pinched the crest of the shawl between two fingers. With a quick flourish, he lifted it to reveal a magnificent chess set.

Laura gasped, "*Bellissima!*"

The board's squares were made of rosewood veneer; half of the squares were stained a golden amber, the other half glinted in a deeper rosy hue. The frame of the board was fashioned of walnut, rubbed with an inky dye to darken its tone. The chess pieces were carved of alabaster; one set had been dipped in a red tint, the other shone a creamy white. The royal couples of the game—the kings and queens—were represented with stately and stern faces, the knights carved as horse heads, with strong-jawed, implacable glares. The bishops had solemn looks and the towers were topped with impressive parapets. The pawns were carved as foot soldiers, carrying small lances.

"Oh, Papà. You remembered I wanted to learn scacchi! Can we play?"

There was a twinkle in his eyes. "It is my Christmas Eve present to you."

Laura squirmed with anticipation.

"You had observed, Laura, that the game can be approached mathematically," said Signor Bassi. "So, let's examine the board.

Notice there are eight vertical columns—these columns are called ‘files.’ The rows can be referred to in rising numbers from one to eight.”

Laura traced a finger up the side of the board. “Files. Rows one to eight.”

Her father continued, “There are also eight squares that are horizontal to the player. These are called ‘ranks.’ They’re identified with the first eight letters of the alphabet.” Signor Bassi motioned to her grouping of chess pieces. “You’ll play with the lighter colored pieces.”

Laura counted the squares. “My queen now sits on the square that is file number one, rank D.” She assessed the other pieces, getting their placements set in her mind. “My king is on the file number one, rank E. He has a bishop, knight, and tower to protect his right flank. I have eight soldiers lined across the board, starting in file number two . . .”

Signor Bassi explained, “They’re meant to protect the king and queen and the court. The pawns are considered to be of least value on a chessboard.”

“But if the king needs this line of protection, how can they be considered of less value?”

Signor Bassi rubbed his hands together, looking forward to the game. “Perhaps Count Marsili will tell us more about military strategy.”

Laura paused, considering her father’s words. “Playing chess is like a battle?”

“Sì. It’s about knowing when to attack and when to hold back.”

Laura sighed. “I wonder if Count Marsili will answer me if I get a chance to ask him another question.”

Signor Bassi was still rankled at Marsili’s pointed dismissal

of Laura. But there was nothing he could do about it. The count was an important person in Bologna.

“When you’re ready to start, my daughter, you will say, ‘White—to play.’”

Laura’s eyes narrowed, her voice full of worry. “Papà, what if I win the game?”

Confused, Signor Bassi tipped his head to the side and told Laura there was a winner and loser in every game.

“But Eugenia told me that a girl should always let the boy win.”

Signor Bassi chose his words carefully. “Would the game be fun for me if I knew I would always win?”

Laura thought about that. “I don’t think so. I think you would grow tired of playing chess with me.”

“I think so, too,” Signor Bassi said. “Every person should rise to their best possible self. In life. In chess.”

Laura’s grin was wide. “*Bene, Papà.*” She reached her small hand to move a pawn. “White—to play.”