

# AHS Capstone Final Draft

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## Planning a Historical Fiction Novel

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## Contents

Novel Groundwork .....	1
Outline .....	1
Beginning Chapters .....	4
Context.....	11
Author’s Note .....	11
Appendix.....	13
Historical Outline.....	13
Works Cited .....	22

## Novel Groundwork

### Outline

#### Chapter 1:

The year is 1828 and the honorable Augusta “Ada” Lovelace is thirteen years old. King George IV sits on the throne of England and corseted dresses with puffy sleeves dominate female court dress. Ada’s father, Lord Byron, has died four years before, leaving Lady Annabella Noel Byron sole custody of her daughter, Ada. Having lived in fear of Byron claiming Ada for so long, Lady Noel Byron exerts strict control over Ada through her educational regimen: Ada is to focus on math and science and avoid the arts completely. However, this control is borne of Lady Noel Byron’s intense belief that art and poetry drove her late husband mad and that the same could happen to her beloved daughter. Lady Noel Byron tells off Ada for doodling in her homework. Cowed, Ada takes her criticism in silence and then sullenly follows Miss Stamp to the gardens for a botany lesson, where Puff (Ada’s cat) presents her bird. Miss Stamp and Ada free the bird, and Ada becomes interested in flight.

#### Chapter 2:

Ada dreams of a man-made Pegasus powered by a great steam engine to lift people into the sky. She starts observing the birds in the garden in earnest. At first, her mother approves of her interest in ornithology and natural history, but once Ada starts gathering prototyping materials and beginning to put them together in her own wings, her mother shoots her down in her cold way. Her mother makes it clearly that this sort of creativity reeks of artistry, and there will be none of that in this household.

#### Chapter 3:

Confused by her mother’s sudden reversal in approval, Ada rebelliously digs into her father’s work. During a visit into town, she picks up a small folio of his poems and hides them

in her dress to bring home. She reads them and tries to keep them secret, though she later finds evidence that someone has moved them without her knowing! It turns out that Miss Stamp put them in a better concealed place to hide them from Lady Noel Byron. Miss Stamp admits nothing.

#### **Chapter 4:**

Lady Noel Byron leaves to oversee her mines and schools in her northern estates. In her place, she leaves three friends, Mrs. Abbott, Mrs. Honeycutt and Mrs. Foster, to oversee Ada's education. They treat Miss Stamp like one of the house staff, which, as a governess, she is above, and separate her from Ada. Ada attempts to stand up to "the Furies" on behalf of Miss Stamp, but a comment from Mrs. Honeycutt throws her off guard ("Disrespectful to women of good moral character...just like a Byron.") and makes her reconsider her parents' relationship (Lady Noel Byron has never referenced her husband's infidelity in front of Ada). This conflict makes her feel light headed and Ada does not protest when they send her to her room.

#### **Chapter 5:**

The Furies insist on coming with Ada to her next visit into town. Frustrated, Ada literally runs away and enters a weaving factory by chance. Though she is winded by the running, she is absolutely fascinated by the mechanized Jacquard loom in use in the factory. She also encounters working class people, which has never really happened before outside of them working for her family. Miss Stamp later finds her and drags her to the dress shop where Ada examines the beautiful work created by the jacquard loom. The Furies catch up with them at this shop, but Miss Stamp creates a smooth alibi for the two of them ("Beg pardon, Mrs. Foster? We've been studying fabrics this entire time..."). Miss Stamp, however, lectures Ada for running off and the importance of her station ("Miss Ada, that is very unbecoming behavior for a young lady. A young lady never retreats from her problems, let alone *run* from them. Running ruffles the dress, Miss Ada, and that simply will not do.")

#### **Chapter 6:**

The Furies host a dinner party. The entire time, Ada feels ill; the music played is distorted when it reaches her ears. The chandelier light glancing off the crystal goblets fascinates her more than dinner conversation. One of the Furies' friends brings her daughter with her, a pretty, blonde girl named Melody. The adults seat them together, assuming that they should be instantaneously friends. Ada, who has not had a friend her age for a very long time, feels awkward and has difficulty finding common ground with Melody. Furthermore, she feels sick and plain next to this happy and perfect girl. She excuses herself from dinner early and cuddles with Puff morosely.

#### **Chapter 7:**

The furies invite Melody back to go for a ride with Ada. Melody is nice enough and Ada finally figures out to communicate with her peer. The experienced horsewomen and a high-energy girl, Melody insists on sprinting her horse around, while the up-and-down motion of the saddle makes Ada nauseous. A startled murder of crows ("*Corvus!*" muttered Ada. "What was that?" Said Melody. "*Corvus*, that's what Linnaeus would call them. The crows." "Horrid

creatures. So dark." "Well yes...but awfully clever, too.) causes Melody's horse to spook, which races off and then dumps Melody into a briar patch on the side of the road. Far from their chaperones, Ada quells her uncomfortable stomach and goes about figuring out how to get Melody out of the painful thorny bushes. Melody is panicking, understandably. She lays down the heavy saddle blanket from her horse to create a safe path out of the patch for Melody and a lever to tip a heavy branch into the patch so it pushes the brambles away from Melody. She coaxes Melody out and they return, all scratched up, to the Furies and Melody's aghast mother.

### **Chapter 8:**

Ada visits Melody with Miss Stamp to see if she's better. Melody is happy to see her and asks her to read some of Tennyson's to her as she is still feeling unwell. Ada has never read any of these, but happily obliges and finds herself enjoying the afternoon. Miss Stamp looks on, silently approving. Melody's mother is welcoming and dotes on Ada. When they get back to the house, the Furies, noticing Ada's happy mood, corner her and Miss Stamp. Ada refuses to answer their questions, but they pry the poetry incident from Miss Stamp, as Miss Stamp cannot lie to her employers.

### **Chapter 9:**

Lady Noel Byron comes back and Ada complains of the Furies' behavior towards her. Her mother dismisses her complaints, saying they are trivial compared to the education problem she's been trying to solve for the people on her lands up north. Ada, thinking to the textile factory, finds this position difficult to argue with. Lady Noel Byron spends more time with her friends than with Ada, and the Furies tattle on Ada and Miss Stamp about the poetry at Melody's house. Lady Noel Byron is furious with Miss Stamp. Though she tells Ada she is proud of her for rescuing Melody, she bans her from going over to Melody's house again.

### **Chapter 10:**

It is Ada's thirteenth birthday. Lady Noel Byron, as a treat, personally takes Ada to see the new passenger steam engine. Ada is very happy to have her mother's attention, and her mother approves as Ada asks interesting questions of the engineer who designed the device. When they get home, a servant whispers in Lady Noel Byron's ear and Ada's mother instantaneously becomes angry. The servant has found Ada's illicit book of her father's poetry hidden in Miss Stamp's things. Lady Noel Byron calls to Miss Stamp and dismisses her. She has the fury a mother bear protecting her cub: she truly believes Miss Stamp has endangered the well-being of Ada. Panicking that she will lose her best friend and governess, Ada explodes and says some very unkind things to her mother, specifically regarding the love between her and Lord Byron. She sees she has hurt her mother, but before she can fix anything, she faints.

### **Chapter 11:**

Ada awakens to the voices of her mother and the village doctor. She has the measles and must be bedridden. Her mother won't look her in the eye but she does wish for the best care for her daughter. The Furies are gone, banished by Lady Noel Byron for revealing too much about Lord Byron. Ada's fever rises and she develops a rash. To Ada's surprise, Lady Noel Byron gives the poetry book back along with a note from Miss Stamp ("Have you read it?" I asked. My

mother made noise that would have been a snort, except that genteel women like herself did not *snort*. “Of course I have, Ada. Let me say this: Miss Stamp’s services are no longer appropriate here, but I never employ unintelligent people. She writes the truth.”).

The note is pinned to the page with the following poem:

She walks in beauty, like the night  
Of cloudless climes and starry skies;  
And all that’s best of dark and bright  
Meet in her aspect and her eyes;  
Thus mellowed to that tender light  
Which heaven to gaudy day denies.

The note says that Miss Stamp is proud of Ada, and that this poem, while written when Lord and Lady Byron were married, is not about Lady Byron. It’s a love poem to another woman; Lady Noel Byron’s ideas that Lord Byron was crazy and not entirely a good person are not unfounded. Miss Stamp asks Ada to at least come to terms with this and her relationship with her mother.

## **Chapter 12:**

Slowly, Ada gets better. The maids wheel her around in a wheel chair, but she hates how dependent she is on them. In her spare time, she sketches new crutches for her to use, and once she is well enough, sends for a carpenter to make them for her. Once they are made, she happily hobbles around the house to the perpetual and silent concern of her mother (“Ada, I think you should rest at once.” “No, Mother. I think I can do this by myself.”). She and her mother have a new understanding and a truce regarding art and Lord Byron in the household.

## **Epilogue:**

It is now 1832. A month after coming out to society, Ada meets Mr. Babbage at a dinner party; her friend and mentor, Mary Somerville, introduces her to him with a twinkle in her eye. He is a brilliant, fussy man – a portly gentleman of about 40 who always is perpetually folding and re-folding his kerchief. Babbage simply cannot stand imprecision in engineering tables and seeks to correct them with his new device called an “Analytical Engine.” He needs someone to translate the notes from his Italian engineer into English so they may be published in England, and Ada, a mathematician educated in arts and languages is the perfect person to do it...

## **Beginning Chapters**

### **Chapter 1**

*I, Ada, have not done my work very well, but I’ll try to do better tomorrow.* I placed the pen down and handed Mother the paper, my apology neatly inked across the top. She glanced at it

and then at the math below. Her eyes lingered on the large red X three-quarters of the way down the page before they snapped back to me.

I hurriedly looked down at the desk.

"Ada, you know better than this," Mother sighed. "These angles are equivalent, which you could see were it not for..." She placed the paper before me and tapped the offending drawing. Underneath her accusing finger, a magpie perched on the corner of a parallelogram.

"Were it not for *this*, Ada."

Mother didn't sound angry. She never did. She just sounded so completely and utterly disappointed, like I had spilled India ink on her favorite evening gown. I cringed beneath her gaze, unwilling to say anything, until a little cough bubbled up and out of my lungs. It had started again. I coughed and coughed and coughed; I had caught the cold three days ago and had not shaken it since. Behind me I heard a rustle of fabric.

"Ma'am, perhaps you should let Ada rest. That's simply the work of a bored child."

Mother sighed.

"Very well, Miss Stamp," she said to my governess. Her voice was pained, as if she was the one struggling with the sickness and not me. "Correct these problems, Ada, and then you may have the afternoon off. I just wish that you would leave the art alone. I don't want your sickness spreading to your head. We should do everything we can to spare you your father's madness, shouldn't we, Miss Stamp?"

"Of course, Lady Byron," said Miss Stamp.

"Good." Mother purred. She stared at me once more to emphasize her meaning. Then she turned and swept from the room.

At the end of the hour, I passed Miss Stamp my revised paper. She examined it through the little glasses perched on the end of her nose, her soft grey eyes made rounder and brighter through her lenses. The glasses lent her a studious air and they, combined with her silvery-blond hair, projected the image of a lady much older than Miss Stamp's twenty five years. No doubt they had helped convince Mother that Miss Stamp was a respectable, learned young woman who would make an excellent governess, unlike the uncultured and regrettably no longer employed Miss Fitzroy. I had liked Miss Fitzroy – she had the loveliest singing voice and she always smiled as she taught me the scales on the piano. However, Miss Fitzroy's French was a little too *commun* in the opinion of the honorable Lady Annabella Noel Byron, my esteemed mother.

I tapped my pen idly on the table as Miss Stamp continued reading.

*Tip tap. Tip tap. Tip –*

"Shh, Ada. Patience, I'm nearly done."

I complied and contented myself with tracing the wood grains on my desk. I knew each and every one by now, thanks to the geometry, French, music and reading that took place here. This seam blended into that one, which flowed around the knot here. That troublesome knot – I always punched a hole in my paper when my writing wandered over it.

A moment more, and then Miss Stamp said, "Well done, Ada." She stood and moved to her desk and placed the paper within a folio along with its countless brothers and sisters. "Your mother will be pleased with your progress. I think you have an excellent grasp of the material." She smiled kindly.

"Thank you, Miss Stamp," I replied tiredly.

"Well, Ada. You have the afternoon to yourself. What would you like to do?"

"I don't know." I couldn't keep the bite out of my voice. I rarely had time to myself during the week, so I felt overwhelmed when suddenly confronted with some manner of freedom like today. At the same time, the reluctance with which my mother had granted this liberty soured me as well.

Miss Stamp raised a slim brow. She stood, smoothed her dress, and walked to the window of the classroom. She tugged the curtain even further open and peered down at the estate lawn.

"It looks very pleasant out. Would you like to take a walk in the garden?"

I shrugged. "Very well."

"Wonderful!" said Miss Stamp. Despite my so very obvious enthusiasm, she plucked my shawl off the back of a classroom chair and wrapped it around my shoulders. "The flowers are in deep bloom and I think you will like them very much."

"If you say so."

"I do. Let's walk, shall we?"

Bifrons, which my mother maintained as our primary residence, was neither the Byron nor the Noel family home – my mother's lands were up north, but she said that the milder temperatures here suited her constitution better. Mother also believed gardens nourished the soul and consequently ours were the best in Kent. Or, at least, that is what her endless parade of visiting friends said. I had not seen many other gardens to judge this for myself.

It was true that the flowers bloomed in vibrant colors and were planted in charming arrangements. They, like me, were well cultured. A path accompanied by low hedges looped through the beds and smaller lawns, punctuated by the occasional fountain or topiary.

I breathed in deeply. Though it was June, a small rain had cleared the air this morning. At the edge of the garden, a straw hat bobbed up and down as the gardener, Mr. Howard, plucked weeds from the ground.

Beside me, Miss Stamp waited patiently. I turned to her and she smiled again. "Would you like to continue the walk, Ada?"

I shrugged once more. I was feeling a little better now – my nose was clearing, the warm weather was warding off the chills, and my mother was nowhere around. I felt a little sheepish about my earlier sullenness toward Miss Stamp, but at the same time, I couldn't admit that to her.

We strolled down the path toward into the heart of the garden. I settled on a nearby bench, but Miss Stamp continued her walk until she reached a wall of sunflowers. Mother imported them from Tuscany and had tended to them herself for a full week before she had gotten bored and went back to calling on her friends and vacationing in Bath.

"Ada, I think you should take a look at these sunflowers."

"I can see them very well from here, Miss Stamp. They're quite nice," I said.

Miss Stamp turned to me. "I think you should take a look," she repeated.

Though her voice held no reproach, I knew I would not win this battle. She would simply re-state her demand until I complied and Miss Stamp had the patience of a tortoise.

I sighed, stood, and made my way over to where she cupped a sunflower in her hands. The sunflowers, young as they were, were about my height and swayed in the slight breeze.

"Could you count the whorls in the seed patterns for me, Ada?"

"What?"

Miss Stamp traced a spiral in the tightly packed seeds. Then she ran her finger over the next adjacent spiral. "How many concentric spirals are there in this sunflower?"

I frowned and considered the flower. The tightly packed seeds spiraled inward in repeating, mesmerizing loops. Like Miss Stamp, I traced each set of seeds with my finger to keep my spot. A bee buzzed right by my ear, but I flicked it away impatiently.

"I count thirty-four," I said, finally.

"I was counting the spirals in this orientation," Miss Stamp gestured over the flower. "I found fifty-five. Let's try this again. When the spiral is angled like this, how many are there?"

This time the spirals ran obliquely around the sunflower and so there were fewer. "Twenty-one, spirals." I paused and considered what we had uncovered. "These are all Fibonacci numbers, aren't they, Miss Stamp?"

Miss Stamp smiled again. Her smiles, though not as bright and open as unabashed as Miss Fitzroy's had been, were always genuine, but this one was the smallest bit more brilliant than others.

"They are! Isn't that fascinating?"

"But why is that?" I looked around and walked over to some lilies nearby; I counted six petals and seven stamens on one of the blooms. "I don't see this in other plants." I pulled some lilacs out of their shrub—four petals in clusters of ten.

"Careful!" A male voice cried. Mr. Howard stood on the other side of the bush. I had not seen him approach in my counting. "Your mother is very partial to those lilacs, Miss Ada. Please don't be rough with them."

I released them and, under the watchful gaze of Miss Stamp, resisted the urge to glower at him. "Of course, Mr. Howard. I will be more careful in the future."

"Thank you, Miss Ada." He tipped his hat and continued on his way with his basket of weeds.

I turned back to Miss Stamp and I rubbed my chin idly. "What is so special about the sunflower, Miss Stamp?"

"I haven't the slightest idea, Ada. The Royal Horticultural Society published a brief on it last week...they are quite baffled. If you have any ideas, Ada, be sure to write the Society."

"Hmm..." I was unsatisfied by this answer. Another breeze sprang up and suddenly the air filled with the smell of roses in the next bed over. Although it did seem strange that the sunflowers had this hidden pattern inside them, it did not seem too unusual upon second consideration. Most flowers favored some sort of number themselves—oranges had eight sections and while clovers grew with three leaves. The sunflower, with its numerous seeds, just has slightly more complex taste in numbers.

"Puff!" Miss Stamp called, startled. My head snapped in her direction and I saw the tail of my cat vanish into the hedgerow. I hurried over to where she stood, hand over her mouth.

"Where'd she go? What's Puff doing out here?" I crouched down and peered into hedges.

A gentle hand pulled me back. "Ada, she has a bird in her mouth. I think it may be dead, so please don't touch it."

I shook her off and looked into the bushes again. "Mrs. Crenshaw must've let her out when bringing in the groceries again. Miss Stamp, we must bring her back inside!" My voice broke a little at the end and I let out another series of coughs.

Miss Stamp stared at me. I could see behind the grey eyes the great gears of her mind turning away as she evaluated the possibility of persuading me to leave Puff be.

"Very well," she conceded. "Let's see if Puff can be convinced to let go the bird. You wait here, I'll try to drive her back this way."



My governess walked briskly down the path and around to the back of the shrubbery. "Shoo, Puff! Drop the bird, dear!"

I heard a growl.

Miss Stamp sniffed. "How rude, Puff."

The shrubbery shook and I pulled the dense branches apart to get a better look into Puff's hiding place. The leaves tugged at my billowy sleeves. Crouched at the base of a hedge was Puff, her gleaming green eyes watching me as I struggled with the tree. In Puff's mouth was a small bird – a sparrow, perhaps.

Miss Stamp moved and Puff's ears twitched. The wing of the bird fluttered.

"Miss Stamp, the bird's alive! Come here, Puff!" I called. I clicked my tongue. "Here, Puff!"

Puff glared at me and her white-tipped tail lashed back and forth. Suddenly, Miss Stamp reached forward and brushed the back of Puff's head. Puff leapt up and scrambled towards me. I shuffled sideways to block her, and in her panic dropped the bird as she fled from the hedge and across the lawn to the house.

"Puff! Drat."

"Language, Ada," Miss Stamp said primly. "Puff will come back when she's hungry – oh!" The sparrow had righted itself and was hopping around on the path. Only one of its wings was open – the other clung to its body, marked with spots of blood. "Poor thing."

I looked around the garden until I saw the familiar straw hat of our gardener. "Mr. Howard!" I called.

"Ada, young ladies do not yell," Miss Stamp chastised, though before she had finished her sentence, she was walking swiftly in his direction. I followed, attempting to imitate her purposeful stride.

"Mr. Howard," she repeated. He looked up from his labor.

"Ah, Miss Stamp. What may I do for you?"

"Ada would like something of yours."

Mr. Howard scratched his head through his greying hair and squinted at me. "Anything for Miss Ada."

"I would like one of your baskets," I said quickly. Surely the little bird couldn't hop too far!

"My...basket?"

"Yes, please. It's rather urgent."

"But..."

"I realize this is terribly inconvenient for you, Mr. Howard. But Ada would really appreciate your assistance," Miss Stamp said smoothly.

Mr. Howard nodded and unloaded the weeds from one basket and stacked them to overflowing on the other. He handed the other to me, tugging at his hat.

"There you are, Miss Ada," he said.

I started away, but Miss Stamp's hand snapped out to catch my by shoulder.

"Thank you, Mr. Howard," I said reflexively.

"Yes, thank you." Miss Stamp let me go and I walked as quickly as I could back to where Puff had dropped the bird. It had made its way a little farther down the path, leaving a few feathers on the stone slabs behind it. Now it rested in the shade of the hedges, its tiny breast heaving.

Once I thought it could see me, I removed the lid from the basket. I approached it slowly: I set one foot forward, counted to ten, and then moved the other. Slowly, slowly. Each

step made agonizingly slow progress toward the bird, but it seemed unalarmed by my presence. Behind me, Miss Stamp watched from a safe distance away.

The bird's eyes were closed now and its chest had settled into a steady in-and-out. I felt a tickle in my throat and ruthlessly suppressed the urge to cough. Any noise now would send it away. Now a mere arm's length away, I reached out and put the basket on the ground behind it. As gently as I could, I flicked the bird into the basket with the lid and closed the basket.

Inside, the bird scabbled frantically and cheeped in protest.

"I'm sorry!" I whispered. "It'll be better, I promise!" I looked to Miss Stamp. "What do sparrows eat?"

She folded her hands together in front of her. "We shall find that out, Ada. It appears to have slipped my mind – we were due a lesson on ornithology tomorrow."

"Really?" I had not realized ornithology was on my list of topics to learn.

"Oh, absolutely. I have gone to great pains to acquire a live specimen for your benefit. I will let your mother know that we are moving on to ornithology in our natural history studies," Miss Stamp kept her voice incredibly neutral.

I hugged the basket and couldn't help but beam at her. "Thank you!" I whispered.

Miss Stamp permitted herself a small sigh. She reached out and wiped some pollen off my chin with her thumb. "You're welcome, Ada. Now, let's get back to the house. Supper will be on soon, and I imagine Puff has already found her way back into Mrs. Crenshaw's good graces."

## Chapter 2

To my surprise, Sparrow's presence at Bifrons went largely unnoticed. The day after I brought her into the house, Mother left to spend her weekend in London to visit her solicitor or somesuch business. Miss Stamp sent a boy into town to procure a birdcage and now Sparrow flitted around inside its silver bars. I had fitted a small splint to her wing and banned Puff from the classroom. After a worrying day, Sparrow was now eating and drinking by herself.

I carefully slipped some seeds into the round birdcage. In the corner, paper rustled as Miss Stamp paged through the latest edition of the *Times*. It was Sunday, so after I had completed my literature lesson, I was permitted to read, embroider or otherwise develop my mind as Miss Stamp saw fit.

"Primaries, secondaries, tertial, down," I said, pointing the sections of Sparrow's wing. "You have wonderful feathers," I told the bird.

"Did you complete your Linnaeus reading?" Miss Stamp asked.

"Ye, Miss Stamp. Sparrow is of the species *Fringilla domestica*," I said.

"Very good."

I walked around the back of Miss Stamp's chair, and standing on tiptoes, rested my elbows on the back of her chair. My eyes tracked down the page until a bold headline caught my eye:

### County Durham *Railway Locomotive Explodes, 1 Dead*

The short article that followed described how one of the locomotives of the Stockton and Darlington railway had exploded when leaving a station. The operator was sadly killed in the explosion and this was the second disaster of this type for the railway this year. The *Times*

voiced its concerns over the safety of the devices, though it noted the Stockton and Darlington was extremely profitable in transporting coal.

"Quite sad, don't you think?" Miss Stamp said, gesturing to the article. "I hope the man's family is well taken care of."

I agreed and wandered back to Sparrow. I hoped his family was as well taken care of as Sparrow was now.

"Have you ever seen a steam locomotive, Miss Stamp?" I asked.

"No. I have seen steam engines in workhouses, and one of towns south of here uses one to pump water, but I've never seen a locomotive."

I had only seen steam engines from a far, most of which were nestled in the mines of Cornwall. They were loud and creaky and belched white steam, all while giving off a perpetual haze from the burning coal beneath the boiler. They looked like monsters and very powerful ones at that.

I looked back to Sparrow and his beautiful wings.

I sat down at my desk and began sketching. Steam engines moved coal and freight across England and up mine shafts and powered looms. Surely they could transport people one day.

I did not even notice Miss Stamp's movements until she was beside me. This time, it was she who was peering over *my* shoulder.

"What's this?"

I covered my sketch instinctively. "Nothing."

Miss Stamp simply looked at me. She didn't even have to point out how damning my reaction had been.

"If I show you, do you promise not to laugh?"

"Of course, Ada. I would never laugh at you."

I slowly removed my arms from over my paper. "Is that a Pegasus you have sketched? What is that in the middle? Ah, a steam engine."

"I want to fly," I admitted sheepishly. When Miss Stamp didn't laugh, I continued. "I think we could have the wings powered by a steam engine, provided the wings were light and the steam engine small."

Miss Stamp glided over to look at Sparrow, who cheeped at her expectantly. She carefully refilled his water saucer from our nearby pitcher.

"So what are you going to do with this idea of yours?" She asked. "We spent the last two days on ornithology; you should have a decent understanding of bird anatomy now."

"Well..." I looked around the classroom. We had no books on steam engines at the moment, although Mother had mentioned something in passing about adding them to the curriculum. "I guess I will begin with studying the wings. What is lightweight and strong?"

"I don't know. What do you think is lightweight and strong?" Miss Stamp settled herself back into her chair and picked up her paper once more.

I frowned at Miss Stamp. Sometimes her teaching was too Socratic for my tastes.

"Silk...and paper, I think." I poked the ottoman. "Leather, too, but I think it might be too heavy."

I flipped open my *Systema Naturae* to the images of birds and began tracing a wing onto another piece of paper. Using one of the pencil sharpening knives, I cut the wing out and waved it through the air. It caught and fluttered with movement. I needed to stiffen the wing somehow...I needed to find wire.

I reached for the bell pull on the wall of the school room and then went back to tracing a different wing pattern. When Clara, one of our maids, appeared, I sent her off with a long list of things I might need.

An hour later I had several designs wrapped around some wire procured by Clara. I waved each through the air, sense the resistance they gave as I pulled them through the atmosphere. The sparrow wing, being the smallest, provided the least difficulty, but that made sense: sparrows were extremely small, and consequently their wings had to carry less. I pondered how to quantify this when the door to schoolroom opened again.

"Did you find more wire, Clara? Thank—" I looked up and my heart sank. My mother, in her voluminous travel gown, filled the doorway instead of our hapless maid. "Oh, hello Mother. You are back quite early."

My mother sniffed. "Indeed. London is horrendously stuffy right now. Couldn't stand it." She picked up one of my wings. "Is this for your ornithology studies?"

I glanced at Miss Stamp. She gave the tiniest nod behind my mother's back. "Yes, Mother. We thought it would be best to understand wings by interacting with them."

"Interesting..." Mother turned to Miss Stamp. "Has she been reading Linnaeus?"

"Yes, and some Solander, Lady Byron."

That seemed to appease mother. Her razor-sharp gaze looked over the rest of my desk. I casually slipped the Linnaeus over my sketch of the Pegasus, but the movement caught my mother's eye. She plucked it from the paper. "And what is this?"

My stomach tightened. Perhaps if I vomited she would go away.

"A...flying device. For people, Mother."

Mother looked to the drawing, then at me, and then at the drawing again. Then she reached forward and placed a cool hand on my forehead. "Are you feeling ill, Ada?"

"No, mother," I said.

"Are you sure? You feel quite warm." Concerned oozed from my mother's words like wax down the side of a candle. Slow and burning to the touch.

"I am very well, I think," I said. I hated how my voice tremored before her. In the corner, Miss Stamp observed with a blank expression, her back straight as a pillar.

Mother stood back and folded her hands primly in front of her. "I just wanted to be sure. Ideas as overwhelmingly ludicrous as the one you've drawn are sometimes symptoms of illness, my dear. I would know." She turned to Miss Stamp. "Ada's remaining ornithology lessons, which I think should be few, shall be from the readings only."

## Context

### Author's Note

*This is an author's note that would go at the end of my hypothetically completed novel. If/when I complete my novel, I would like to include something like this at the end to shed some light on Ada's role as a politicized historical figure as well as provide resources for readers looking to explore her later work with Babbage. I would perhaps separate this into two sections – "Author's Note on Ada, Countess of Lovelace" and "Acknowledgements" – I suspect my list of people to thank will grow substantially between now and publication.*

This project began as a short story written for a class in about eight hours the night it was due. I had long had an interest in Ada Lovelace, so in ten hastily written pages I attempted to capture the complex relationship between Ada and her mother, Ada's rebellious love of art *and* science, her deep connection to her absent father, and her famous collaboration with Charles Babbage.

The story was brilliant, polished, and everyone loved it. I understand this is a common outcome for frantically created first drafts.

In reality, my story was rough and horrendously confusing to those who had not spent nearly as much time on Ada Lovelace's Wikipedia page as I had. My professor, James Wallenstein, wrote, "The chapter is chock full of potentially interesting material that merits fuller development. But of course it is this very richness and promise--fullness or over-fullness--that make it hard to read..." Others echoed this feedback and added many more suggestions for improvement: I needed to develop the character of Ada's mother; the plot moved with baffling speed; what's going on with this math stuff in the middle? Regardless, there was clear interest in Ada's story. People wanted to know more about this peculiar mathematician daughter of the infamous Lord Byron and the following semester I resolved to expand my short story to a novel. Under the guidance of the fantastically helpful and patient Drs. Gillian Epstein and Rob Martello, I dove into researching Ada's early life and mapping the beginnings of this novel. Studying Ada not only taught me much about her, her milieu, and the beginning of computing; it also led me into a surprisingly politicized realm of scholarship.

Ada is *incredibly* controversial. Her life is rarely explored by those without an agenda.

Some historians consider the world's first programmer for her revelation that the Analytical Engine (Charles Babbage's mechanical computer) could be "act upon things beside number"; it could be manipulated to create music just as easily as it evaluated polynomials with the right setup and inputs. Others question her mathematical abilities and re-attribute much of her work to Babbage and his co-engineers. Regardless, the former view is much more popular with the general public: Ada worked in mathematics during a time that was incredibly restricting for women, and the idea that she made a significant contribution to the male-dominated fields of engineering, mathematics, and what would later become programming, is a lovely notion indeed. She is often held up as a hero and role-model for young aspiring female engineers in webcomics and children's books.

"Look, Ada held her own in an all-male field. You can do it too," is the message.

As a young female engineer, I admit this is how I encountered Ada and why I was originally drawn to learning more about her. I was shocked to find that this was not, in fact, the commonly-held view of her in the historian community. The truth is that there is no consensus regarding her contributions to Babbage's Analytical Engine, although most historians will agree that she had math skills beyond nearly every other women of her time (excluding her mentor, Mary Somerville, whose brilliance is well-documented). For this reason, I chose to not explore her interaction with Babbage and instead envision her as lonely young girl with a curiosity about the world around her. This is a largely un-controversial interpretation of her life, but, like so many others who have created work around her amazing story, I have an agenda as well. I,

like so many of my fellow female engineers, was a curious little girl who liked the boy's engineering toys, and so that is the girl I wish to see in her.

So was Ada the first programmer? Did she contribute to the amazing Analytical Engine and contribute to the nascent field of computing? I like to believe so, but I would encourage readers to investigate this, as well as her fascinating life story, on their own. Look to historians Doron Swade (*The Difference Engine: Charles Babbage and the Quest to Build the First Computer*) and Allan Bromley for skepticism of Ada's work. Read James Essinger (*Ada's Algorithm: How Lord Byron's Daughter Ada Lovelace Launched the Digital Age*) or Betty Alexandra Toole ("Ada Byron, Lady Lovelace, An Analyst and Metaphysician," IEEE) for defense of her genius.

Regardless of her contributions to science or lack thereof, I hope that young would-be engineers explore the world fully and with Ada-esque enthusiasm. "You know I believe no creature ever could WILL things like a Byron. And perhaps that is the bottom of the genius-like tendencies in my family. We can throw our whole life and existence for the time being into whatever we will to do and accomplish...in my whole ideas and nature, I mean to do what I mean to do," writes Ada in 1841.

Passion like that drives people to great heights.

## Appendix

### Historical Outline

1. Anna Isabella "Annabella" Milbanke (Ada's Mother)
  - a. Upbringing
    - i. Born in 1792 to a wealthy family in Seaham. Not regarded as a beauty of the time, but doted on immensely as an only child of older parents (Essinger 21).
  - b. Marriage to Lord Byron
    - i. Met Byron in 1812 during one of her "seasons" in London. She had read *Childe Harold's Pilgrimage* and found it interesting. She wrote of him:
      1. "It appeared to me that he tried to control his natural sarcasm and vehemence as much as he could, in order not to offend, but at times his lips thickened with disdain and his eyes rolled impatiently" (Essinger 23).
      2. The "season" began after Christmas and lasted until August, when the stink in London drove the nobles away (Stein 4).
        - a. Marriages were mostly mutually-beneficial contracts that exchanged money and lands for status. Both the bride and groom rarely met before their marriage, although they were both theoretically permitted to marry whoever they wished (Stein 6).

- ii. Rejected his first marriage proposal in 1812, possibly due to a letter Byron's lover had written her to warn her off him (Essinger 24).
- iii. Left her and Byron's home with Ada to stay with her parents in Seaham a month after Ada's birth (Essinger 5).
- iv. Began (secret) letter correspondence that deepened her "friendship" with Byron after meeting him, although Byron simultaneously courted other women (Essinger 25).
  - 1. Byron lived and slept with his sister, Augusta, while he was writing to Annabella. When his plans for courting another lady fell through, he decided to pursue Annabella in earnest (Essinger 27).
  - 2. Introduced Annabella to Augusta and then worked them against each other. Told Annabella that "he and Augusta had 'no need' of her." Strangely, they had a good relationship (Augusta really liked Annabella) and Annabella did not blame Augusta for her affair with Byron (Essinger 29).
  - 3. After learning of Byron's relationship with Augusta and his homosexual activities at school, Annabella starts suing for separation from her husband (Essinger 34).
    - a. "To achieve a separation while retaining [Annabella's] social acceptability, her financial independence, and the custody of her month-old child required that 'the world' be made to believe that her husband was a monster of iniquity and she was a faultless saint; yet she could not be seen to be the one who did the showing" (Stein 15). She obtained many solicitors and used the rumor mill to keep public opinion in her favor.
    - b. She attacked Augusta's reputation as Augusta was the logical choice after Byron to take custody of Ada (Stein 16).
- c. Relationship with Ada
  - i. Ada annoyed Annabella when she acted like Byron. Expected Ada to appreciate her for her strict, righteous upbringing (Essinger 37).
    - 1. Greig, Ada's friend, describes their relationship: "Ada's feelings toward her mother were more akin to awe and admiration than love and affection. The familiarity of mother and daughter never subsisted between them, there was always a degree of repulsion and distrust altho they were proud of each other..." (Stein 25). Annabella fiercely admonished Ada every time she brought up Lord Byron, though.
    - 2. Miss Doyle, Miss Montgomery and Miss Carr were friends of Annabella's who helped raise Ada. However, they often tattled on

Ada and watched her so much that Ada named them the “Three Furies” (Stein 33).

- ii. Often overcome with sickness and went away on “rest cures” (Essinger 37).
    1. Nevertheless, Ada affectionately wrote to her mother when she was away and made sure she knew she was up to. “My dearest mammy....” “I hope I am not very troublesome....” “If you have too much to do, pray don’t write to me at all, I am dying to ride over on horseback to Battle to meet you on Wednesday” (Essinger 38).
      - a. Letters probably guided by a governess.
  - iii. In 1825, Annabella’s parents were both dead and Annabella inherited their substantial estates/wealth. Now had money to educate Ada as she pleased (Essinger 45).
    1. Essinger believes that Annabella was a product of her time and that she “did not, however, have any intention of encouraging Ada to be a professional woman of science or of mathematics.” She wanted Ada to be married into a stable, older, and more respectable aristocratic family. By providing her with a good education, she wouldn’t marry a nitwit (49).
      - a. Favored mathematics over ‘womanly’ sciences like botany because she saw it as a way to “developing and sustaining mental order and intellectual strength” (Winter 212). This is possibly due to the prevailing idea that women could barely exert enough effort to undertake intellectual endeavors.
    2. They went on a 15 month tour of the continent when Ada was ten. Returned to rent a house in Bifrons in Patricbourne, Kent, to continue to “raise” Ada (Essinger 51).
  - iv. De Morgan, who became Ada’s tutor in 1840, praised Ada’s intelligence but also worried about the toll mathematics would take on her body. Annabella dismissed this, writing, ‘but attend to her stomach, her brain would be capable even of more than she was ever imposed on it.’ She also noted/believed that science and math made Ada very happy at this time in her life (Baum 41).
  - v. Annabella was very fond of phrenology and spoke to Ada in terms of raising the appropriate “bumps” on her head. Ada retained this belief in phrenology, although it dwindled later in life (Stein 30).
- d. Personality
- i. Essinger is of the opinion that Lady Byron used to “guilt trip” Ada into obedience (66).



- ii. "A-da" was her flirtatious version of "adieu" used in her letters to Byron before their marriage (Baum 6).
- iii. Annabella was very involved in charitable works, and investigated the work of others to make hers better. Some thought she did it out of a desire to control the recipients of her philanthropy, while others thought she did it out of a strict moral and religious obligation (Taylor 433-435).
  - 1. "Lady Byron's causes in the realm of philanthropy took three forms. In chronological order they are: an involvement in prison reform which was not unusual, an interest in the Co-operative Movement" which was, and a concern for education which was of interest to some of her contemporaries" (Taylor 436).
  - 2. Ironically, she was a big fan of the co-op movement despite enjoying and being very proud of her noble birth (Taylor 438).
    - a. She was very active in school reform and attempted to entice parents to send their children to school (Taylor 442). She writes: "the great object of every system should rather be to form good habits of mind than to overload the mere memory with words, or even with ideas though they might be of the kind usually called 'useful.'" (Taylor 443)

## 2. Lord George Byron

### a. Upbringing

- i. Born in 1788 to Catherine Gordon and "Mad Jack" Byron. Mother was a Scottish heiress and Byron's second wife, although Byron spent the vast majority of Gordon's money. Byron fled England before baby Byron was born to avoid his creditors (Essinger 12).
- ii. Became Lord Byron of Newstead Abbey in 1798 at the age of 10 (Essinger 13).
  - 1. Since his mother couldn't touch the Byron money, she subsisted on her "pin money" after he died, which was a small payout from her dowry which was meant to cover her basic expenses. Nevertheless, they continued to put up the façade of solvency, so Byron grew up in a household of acceptable debt (Stein 8).
- iii. Nurse (17ish) physically and sexually abused Lord Byron around the ages of 11-13 until he left for school at Harrow (Essinger 14).
- iv. Became incredibly indebted during college and also went on grand tour of Europe to avoid creditors. Refused to sell Newstead Abbey to cover debts and his mother could cover very little of his expenditures (Essinger 18)
- v. Became popular 1812-1818 as *Childe Harold's Pilgrimage* was published. Very famous (Essinger 19).

### b. Sexuality

- i. Bipolar and bisexual, Byron probably used sex to distract him from his lows (Essinger 15).
    - ii. School was full of homosexual activity, but it appears that had different levels of intimacy (Essinger 16).
  - c. Marriage to Lady Milbanke
    - i. Left England about three months after Anabella's leaving due to rumors of him sleeping with Augusta (his half-sister). Knowledge of the failing marriage was common and he had to avoid his creditors (Essinger 6).
  - d. Life after leaving England
    - i. Sold Newstead Abbey (his childhood home) to fund his travels and lessen some of his debts in 1817 (Essinger 34).
  - e. Relationship to Ada
    - i. During voyage to Ostend (leaving England), he wrote the beginning to the third Canto of *Childe Harold's Pilgrimage*, which calls out Ada (Essinger 6).
    - ii. Frequently asked after Ada in the time abroad (Essinger 35).
      - 1. Wrote to his publisher: "I have not heard of my little Ada, the Electra of my Mycenae, but there will be a day of reckoning, even should I not live to see it" (Essinger 40).
      - 2. Essinger suggests that he was a much better sentimental father from afar, as he regarded his "bastard" child Allegra as troublesome and in the way when she travelled with him. He did not even visit her when she got ill and he was nearby (42).
    - iii. Essinger purports that Lord and Lady Byron were in agreement on how to raise Ada. Byron said, "I hope the Gods have made her anything save poetical – it is enough to have one such fool in the family" (55).
  - f. Personality
    - i. Described his wife as the "mathematical Medea, her mother, who thinks theorems and speaks problems; and has destroyed, as far as in her lay, her husband, by only shaking her head" (Baum 13).
    - ii. "With the development of technology and its dehumanizing influence, which Byron so ardently complained about in his maiden speech before Parliament, the Romantic poets left reason, science, and technology to the empiricists and left the mainstream of society to follow their own path. In Byron's case, the fight for freedom was in a foreign place (Greece), not his home territory" (Toole 4).
    - iii. "Mad, bad and dangerous to know" (Taylor 431).
      - 1. Byron has a cutting wit and is prone to moodiness. He is deeply charismatic, handsome, and utterly irresponsible.
    - iv.

### 3. Ada Lovelace

- a. Birthplace
  - i. Raised in Bifrons, a family estate in Kent. Born December 10, 1815. (Essinger 4)
- b. Childhood
  - i. Began educated at age 4. Schedule when she was 8:
    - 1. 10 – Math
    - 2. 11:15 – French Reading
    - 3. 11:30 – Arithmetic
    - 4. 1:30 – Work
    - 5. 3:15 – Music
    - 6. 4:30 – French Exercise (Essinger 36).
  - ii. Earned tickets when she was good, lost tickets in punishment. Placed in a closet until she behaved better (Essinger 36).
  - iii. When younger (about 6), geography was her favorite subject and she disliked arithmetic. “I, Ada, have not done the notes very well...” (1821) (Baum 10).
  - iv. Worked with blocks at a young age under the tutelage of her then-governess, Miss Lamont and delighted when allowed to create things from her imagination (Toole 5).
  - v. “Sunday was mercifully free of formal lessons-but not "useful occupations" such as walks in the garden (for her to identify the plants), uplifting reading (the history of the beaver being one), and singing. There were, in addition, occasional educational visits, such as the one to the manufacturing towns. The purpose was educational, for herself as well as for her daughter. Machinery, then a novelty, had to be studied if she would understand the conditions of the working classes” (Taylor 448).
- c. Adolescence
  - i. Had a kitty named Puff! (Essinger 51).
  - ii. In 1828, developed an interest in flying machines. In a letter to her mother, she says, “I know you will laugh at what I am going to say but I am going to take the exact patterns of a bird’s wing in proportion to the size of its body and then I am immediately going to set about making a pair of paper wings of exactly the same size as the bird’s in proportion to my size...” (Essinger 53).
    - 1. Asks her mother to get her a bird anatomy book.
    - 2. Talked of making a mechanical Pegasus, with a “steamengine” that would power the flapping wings and take the mechanical horse into the sky. Annabella disapproved so she settled on making smaller, model ones (Essinger 54).

3. She constructed wings after first looking into wing material (paper, oilskin, feathers, etc) and then wrote a book about her ideas, called *Flyology* (Toole 5).
- iii. Became ill at the age of 13 (in 1828), which paralyzed her for some time (polio?). Her governess, Miss Stamp, left the household and Ada was to rest for the next three years. She used a wheelchair/crutches during this time and passed her days learning German by herself (Essinger 59).
    1. Moved for Fordhook Manor in 1832 near London. Became overweight as she struggled to regain her strength (Essinger 61).
  - iv. Had a brief affair with the "son of John Hamble," a young man who helped tutor her. Met him illicitly at midnight behind the outhouses until her mother noticed him and banned him. She ran off with him, but we don't know what happened after that. This was all recorded by her friend Greig in 1834 (Essinger 65).
- d. Relationship with Mary Somerville
- i. Mary was married twice, and had two sons by her first marriage. One of them, Woronzow Greig, became romantically interested in Ada though he was ten years older than her (Essinger 63).
    1. Greig was a good friend of Ada's to-be husband, Lord William King, who he describes as taciturn but a good man (Stein 53).
  - ii. Met Mary Somerville in 1834, who sent her math books, problems, and encouraged her mathematical curiosity in contrast to Ada's former tutor, William King (Baum 32).
    1. "Self-effacing and gracious, Mrs. Somerville was extremely popular on the London scene with both men and women" and "Mrs. Somerville nonetheless held views typical of her time and conducted herself in society in ways that always occasioned admirable comment" (Baum 33-34).
      - a. Mrs. Somerville did not attend society meetings at Oxford (Baum 36). She was brilliant and respected, but at the same time found her place to be in the home. I think she pushed the bounds of what women could do in a quiet way: men who met her respected her, but she was not in anyone's face about her work.
      - b. Somerville attended lectures with Ada and Somerville's daughters, though did not participate in public debate (Baum 37).
      - c. Winter suggests that calculation was devalued as a skill and likened to manual labor. This made it "uncreative" and therefore "accessible to women," which was used to explain how Somerville and other women could contribute

to mathematics. They were simply “repackaging and disseminating knowledge created by men” (207).

- i. Women, being smaller, had less power to put towards solving intellectual problems (Winter 208).
    - 2. Ada was proud, but Somerville was humble and did not believe women had a native talent for anything mathematics or mechanics related and that pursuing these subjects in earnest could result in physical and mental harm. In her autobiography, Somerville writes, “I have perseverance and intelligence by no genius [talent], that spark from heaven is not granted to the sex, we are of the earth” (Baum 38).
    - 3. Somerville was Ada’s mathematics guide throughout her later life. Ada would write to her when she was stuck on a math problem (often a geometric/algebraic proof) and Somerville would fix it. Ada found Somerville intimidating (Stein 56-58).
- e. Work & relationship with Charles Babbage (as applicable)
  - i. Met Babbage at the age of 17 at a dinner party. Had been presented at court not a month before, where she met the King’s son (and found him nice) and was marked as marriageable (Essinger 79).
    - 1. Both Annabella and Ada enjoyed Babbage’s animated company. “Babbage was full of animation and talked of his wonderful machine (which he is to shew us) as a child does of its plaything.” (Essinger 81).
  - ii. Described in a letter to Babbage a way for Solitaire to be expressed mathematically in 1840. This, and the notes, could be considered the “first program” ever written (Toole 6).
  - iii. The idea of a program is stated in her Notes as “Supposing, for instance, that the fundamental relations of pitched sounds in the science of harmony and of musical composition were susceptible of such expressions and adaptations, the engine might compose elaborate and scientific pieces of music of any degree of complexity or extent” (Toole 9).
- f. Later life
  - i. Ada wrote “Sentimental Mathematical Correspondence between two Young Ladies of Rank” in an attempt to educate other women in mathematics, using metaphors and visuals to get her point across (Toole 6).
  - ii. Had an affair with John Crosse, son of Andrew Crosse, who blackmailed her about in in her later life and depleted her finances (Winter 233).
  - iii. Her husband, King, became very close with her mother. Consequently, Ada could not escape her influence as the two of them treated her as a juvenile (Stein 59).

- iv. Ada was generally a terrible parent who wanted nothing to do with her children: "They [my children] are irksome *duties*, & nothing more. Poor things! I am sorry for them. They will at least find me a *harmless* and *inoffensive* parent, if nothing more" (Stein 181).

g. Personality

- i. Annabella wrote to Byron of Ada's disposition: "Her prevailing characteristic is cheerfulness and good temper. Observation. Not devoid of imagination, but chiefly exercised in connection with her mechanical ingenuity – the manufacture of ships, boats, etc.... Tall and robust" (Essinger 43).
- ii. Greig noted "[Ada] was reserved and shy, with a good deal of pride and not a little selfishness which developed itself with her advancing years." (Essinger 63).
- iii. She argued with her mother through letters (around 1833), stating that she would obey her mother until she was 21 in all circumstances because that was the law said, but not a moment beyond. She later apologized for this (Essinger 67).
- iv. Henry Aclunt, after a ride with Ada in 1839, described her as blunt, a "witch" and "very curious" (Baum xvii).
- v. "Little did Byron realized how much his daughter would resemble him despite their different talents – though on occasion Ada could write sentimental and derivative poetry whose saving grace would be its infrequency . 'Ada is very fond of mathematics, astronomy and music but possesses no soul for poetry' was the observation of the bluestocking Caroline Fox" (Baum 11).
  - 1. Ada wrote of her own will in the 1840s, "You know I believe no creature ever could WILL things like a Byron. And perhaps that is the bottom of the genius-like tendencies in my family. We can throw our whole life and existence for the time being into whatever we will to do and accomplish" (Winter 230).
- vi. Ada loved her studies so much that she felt her health decline when she could not pursue them. However, she simultaneously thought (as was the prevailing attitude of the time) that they took a physical toll on her as well. Regardless, she believed her work was worth it: "[m]y intellect will keep me alive, and active" (Winter 220).
  - 1. Ada was uninterested in her own children, and their tutor, Carpenter, believed that her interest in mathematics was to blame. This was chiefly due to the solitary nature of mathematics and how far the subject matter was removed from "sentient beings" (Winter 222).

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