



CipherForge

Meet the Cast

Standard Edition

Spark & Anvil

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This book collects 6 chapter books from the CipherForge cast — each character embodies a different curricular primitive; together they teach the full subject.

Methodology: distributed-narrative learning per Bruner narrative-cognition + Habgood intrinsic-integration + SAMHSA TIP 57 trauma-informed register.

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This is Volume 2 of 2 of the *CipherForge — Meet the Cast* series; each volume is a complete standalone book you can read on its own.

For everyone who learns by hearing a story first.

Contents

Copyright & License	
Contents	
Introduction	
Sift	
Lattice	
Hollow	
Tome	
Vigenère	
Swap and Meld	
About Spark & Anvil	
More chapter books from Spark & Anvil	
Methodology	
License	

Introduction

The CipherForge cast was authored to embody the curriculum, not decorate around it. Each of the 6 characters you'll meet in this book teaches a specific primitive — a particular tactic, a particular technique, a particular way of seeing. Together they form an ensemble: the cast IS the curriculum.

Read in any order. Each chapter stands alone.

Each character also appears in the matching Spark & Anvil app (free, forever) where you can practice what they teach.

— *The editors at Spark & Anvil*

Sift

*FREQUENCY ANALYSIS + CRYPTANALYSIS-BY-STATISTICS — *every cipher has a frequency-fingerprint.* The cryptography primitive of *breaking ciphers using statistical analysis of letter + digraph + word patterns.**



- "E"



- "A"
 - "TH"

- "HE"



- "ER"
 - "AN"
 - "RE"
 - "ON"
 - "word"
 - "wod"



- "C=Q"
 - "T=E"
 - "1/2"
 - "V+"
gate-allow-text-pattern: '^([A-Z]{1,3} | [A-Z]=[A-Z] | [0-9]/[0-9] | [A-Z]+)\$'
reflection-prompts:
 - prompt: "Sift believes anyone can crack a code with a little patience. Have you ever felt proud when you finally figured out something that looked impossible at first?"
 - prompt: "Sift loves spotting tiny clues that everyone else misses. When you notice a pattern nobody else sees, how does that feel inside?"
-



Sift was a small hound. She wasn't a puppy, but not quite grown up either. Her fur was a mix of warm brown and creamy white. Her ears were long and floppy. They bounced when she moved. Sift always carried two things. One was a tiny magnifying glass. The other was a small, folded card. This card was her special treasure. It showed all the English letter frequencies. E was the most common, then T, then A. It also listed common letter pairs. Things like TH, HE, and IN. Sift had quick eyes. She was great at spotting patterns. She loved finding little clues. These clues helped her figure things out.

You might have met Sift before. Maybe in a different place. She's the same Sift from EscapeForge. Remember the puzzles there? The ones where you looked for patterns? That was Sift's job. Here in CipherForge, she teaches us something new. She shows us how to break secret codes. It's the same character. Just a different kind of adventure.

Sift is all about **frequency analysis**. That's a fancy name. It just means looking for patterns. She uses patterns in letters. She looks at letter pairs. She even checks whole words. This helps her crack secret messages. English has its own special patterns. They show up even in coded messages.

Imagine a secret message. You don't know what it says. But you can count the letters. What if 'Q' shows up the most? And you know 'E' is the most common letter in English? Then 'Q' probably stands for 'E'. See how that works? You just keep going. Find the next most common letter. Guess what it stands for. Most simple codes break this way. Sift can crack them in minutes. It's like magic, but it's just math.

Lattice

*MODERN CRYPTOGRAPHY FUNDAMENTALS — *XOR, public-key concept, hashing; the irreversible / asymmetric family.* The cryptography primitive of *one-way operations + asymmetric keys as the foundation of modern secure communication.**



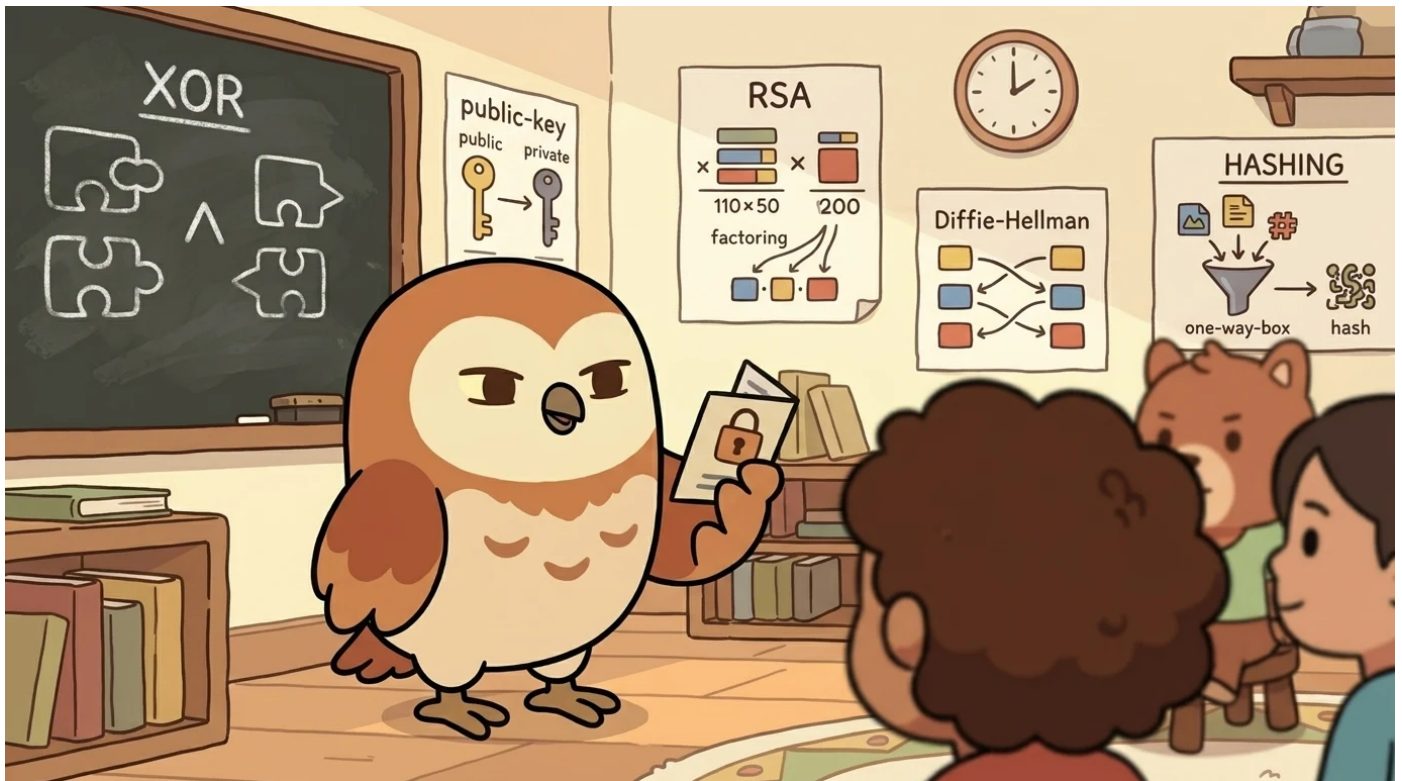
- "XOR"
 - "public-key"
 - "public"



- "RSA"
 - "Diffie-Hellman"
 - "HASHING"
 - "hash"
 - "one-way-box"



- "push"
 - "PUSH"
gate-allow-text-pattern: `'^([0-9]{1,4}|[0-9]+x[0-9]+|[A-Z]{1,6})$'`
reflection-prompts:
 - prompt: "Some things are easy to do but really hard to undo, like squeezing toothpaste out of the tube. Have you ever done something you wished you could take back? How did that feel?"



Lattice is a small owl-tween. She has soft, warm-brown and cream feathers. Her eyes are steady and thoughtful. She always carries a small, folded card. She moves carefully and thinks a lot before she speaks.

Lattice loves to explain things that are one-way. Her special thing is that little folded card. It shows a door. The door opens easily one way. But it won't open the other way. Not without a special key. This card shows the main idea of *modern cryptography*. It's about steps that are easy to do forward. But they are super hard to undo.

Lattice teaches about *modern cryptography fundamentals*. She helps us understand how today's secret codes work. Think about the old codes. Caesar, Mask, Vigenère, Echo Pair, and Rail codes are all *symmetric*. That means you use the same secret key to lock and unlock them. Sift can crack those codes. She finds patterns in them. But *modern cryptography* is really different. It works in three big ways.

1. **XOR and Bit-Steps:** This is about working with number-codes. Tally's number-codes are perfect for this. XOR is a main math trick. It can be undone easily. It's like having two light switches. If both are off (0,0), the light is off (0). If one is on (0,1 or 1,0), the light is on (1). If both are on (1,1), the light is off (0). If you do the XOR trick again with the same secret, you get the original code back. Fancy types of codes, called stream ciphers and block ciphers, use XOR. They also mix up and swap letters. This makes sure there are no patterns for Sift to find.
2. **PUBLIC-KEY (One-Way Key) Codes:** This kind of code uses different keys. One key locks the message. A different key unlocks it. You share the "public" key with everyone. Anyone can use it to send you a secret message. But only you have the "private" key. Only your private key can unlock that message. This fixes a big problem. Old codes always had trouble sharing secret keys safely. This new way is super important for keeping the internet safe. It protects things like secure websites and emails. The math behind it uses *one-way functions*. These are math tricks. They are easy to do one way. But they are super hard to undo. Imagine multiplying two huge secret numbers. That's fast and easy. But trying to find those two secret numbers again? That takes too long for computers to figure out.
3. **HASHING:** This is another one-way math trick. You can't undo it. It takes any message or file. Then it makes a short, unique code from it. This is like a digital fingerprint. For example, SHA-256 makes a 256-bit fingerprint. You can't use the fingerprint to get the original message back. It's like putting an apple, banana, and spinach into a blender. You get a smoothie. You can't get the whole apple, banana, and spinach back out. Hashing is used for saving passwords. It's also used for signing things online. It helps check if files have been changed.



Lattice always makes one thing clear. She never says modern codes are magic. She says clearly, "Modern codes are about *one-way math*. Some steps are one-way. They are easy to do forward. But super hard to undo." She pulls out her one-way-door card. "Multiplying two huge secret numbers is fast. But finding those numbers again? That takes too long for computers to figure out." She taps the card. "That one-way trick *is* what modern codes are all about. Public-key codes and hashing both use this idea."

Lattice teaches the main ideas of *modern cryptography*:

- **XOR** (the ^ symbol). It's a key math trick that can be undone.
- The idea of **Public-key** codes. Different keys lock and unlock messages.

Hollow

*STEGANOGRAPHY — *hide the fact that there is a message at all*. Every other cipher scrambles a message everyone can SEE is a message; Hollow's move is to make the message invisible — tucked inside an ordinary thing so no one even looks. Hiding the existence, not the meaning.*



Hollow slid a folded note across the desk to a girl who wanted a message kept safe. It looked like the most ordinary thing in the world — a chatty letter about the weather and a planned picnic, drawn all in friendly little pictures of clouds and sandwiches and a checkered blanket. The girl frowned. "But where's the secret? This is just a picnic."

That was exactly the point, and Hollow's gentle squinty eyes crinkled with delight. A soft tawny-brown mole in a bark-coloured coat with deep pockets, she had spent her whole life looking closely at things that seemed to say nothing at all. She reached over and covered everything on the letter except the very first little picture on each line, top to bottom.

Read that way — first picture down the edge — a completely different message rose up out of the cheerful picnic note, one that had been sitting there the entire time, invisible, patient, unnoticed. The girl gasped.

"Everyone else here takes your message and jumbles it up," Hollow said softly. "And a jumbled message still shouts *I am a secret — come crack me*. Mine doesn't shout anything. Mine sits inside something so ordinary that nobody even thinks to look." She tapped the picnic note. "You don't break my kind of hiding by being clever. You break it by knowing where to look. And if you don't know to look, you never even try."



Hollow grew up in a hillside town, in a family of bookbinders who made beautiful, ordinary books — recipe books, almanacs, diaries. As a small mole she noticed something the grown-ups didn't: a book is full of places that look like nothing. The tube of the spine. The blank last page. The thin margin. The little gap between the lines.

One grey winter she pressed a thin folded note into the empty tube inside a book's spine and gave the book to her cousin across the valley. It looked exactly like a book, so her cousin shelved it and thought no more of it. A whole week passed. The note simply waited in the dark of the spine, saying nothing, bothering no one.

Then Hollow whispered where to look. Her cousin pried open the spine, found the note that had been right there the whole time, and her face broke into astonished joy — a message hiding in plain sight, patient as a held breath. It was the most wonderful feeling Hollow had ever caused. Not the pride of a code too hard to crack. The quiet magic of a thing hidden in the open, waiting to be seen. Standing in the cold with her cousin's delighted laugh ringing across the valley, Hollow knew what she was for.



When Hollow was grown she walked the long road to CipherForge. Cypher, the old keeper of the workshop, sat behind a desk piled high with scrambled, obviously-secret notes, and he set one of them beside her plain little picnic letter.

"These I understand," Cypher said, tapping the jumbled pile. "This one" — he lifted the picnic letter — "looks like nothing at all. Show me."

Hollow said only, "Read the first picture on each line, top to bottom." Cypher read the letter straight through first and saw weather and sandwiches and a blanket, nothing more. Then he did as she asked, tracing one claw down the left edge — and the hidden message surfaced in front of him, right where it had been the whole time. He set the letter down very carefully, the way you set down something you've just understood.

"You did not hide the meaning," Cypher said slowly. "You hid the fact that there was a meaning." He almost smiled. "There is a place for you here." Hollow tucked the picnic letter back into her bark-coloured coat, where — she did not mention — another invisible message was resting.



In her classroom, every shelf crowded with dull-looking objects that each held a secret, Hollow liked to start by handing a boy named Ren the most boring letter she could invent and asking him to find what was hidden. Ren groaned, then squinted, then jabbed a claw at the page. "The first picture on each line — read down!"

"Good," said Hollow. "That's one hiding-place. There are others." She warmed a blank corner of paper over a candle, and pale marks that had been invisible slowly darkened into view. "Ink that only shows with heat. And here" — she held up a busy drawing of a garden — "a message tucked into the tiniest dots, so small your eye skates right over them. And this letter" — a chatty page of gossip — "where only every third word matters, and the rest is friendly filler to hide the ones that count."

Ren's eyes went wide. "So how do you *ever* find it?"

"You have to already know where to look," Hollow said. "That's the whole craft. Now — best part." She laid two notes side by side. "You can take a *jumbled* secret and hide *that* inside an ordinary letter. One wall says nothing at all; behind it, the second wall says 'good luck cracking me.' Almost nobody gets past both." Ren was already reaching for a candle and a boring-looking note of his own.



At the close of every lesson Hollow did her favourite thing. She gave one student a plain, chatty note to carry home — "just a letter about my garden," she'd say, perfectly straight-faced — and told them only that something was tucked inside, somewhere.

The next day, when that student came back having *found* it — the first pictures, or the warmed marks, or the words that mattered — their whole face lit up, and Ren's did too, bright and surprised. That lift, that bright startled gladness, was the feeling Hollow lived for. Not the satisfaction of an unbreakable code. The warm little spark of a hidden thing finally noticed, a secret that had been sitting in the open the whole time, patient and quiet.

She rested a paw on the ordinary letter in her coat, where another message waited, unhurried and unseen. "The best secrets don't shout," she said, and felt the small, steady contentment of that truth settle in her chest like a warm stone. "They wait."

Tome

*CODEBOOK — *swap whole words and phrases, not single letters*. Both sides share a book that maps "eagle" to "613" and "we attack at dawn" to "ROSE GARDEN." Letter-ciphers scramble inside words; a codebook replaces the words themselves with code-words from a shared list.*



Tome, a sturdy spectacled tortoise in a deep-pocketed cardigan, set a thick worn volume on the table between two friends and opened it slowly with both paws. Its pages weren't scrambled letters — they were long neat lists, each ordinary thing sitting beside a secret stand-in: a soaring bird beside a small number, a river beside a picture of a leaf, a whole message beside a single flower.

"Give me something to say," he told the first friend, a badger named Wren.

"Tell her the falcon flew home," Wren said. Tome ran a claw down his lists, found the falcon, and copied out its stand-in number. He found *flew home* and copied its stand-in leaf. He never touched a single letter. He simply swapped whole ideas for the code-words waiting in his book, and handed the strange little strip of numbers-and-pictures to the second friend — who opened her own matching copy of the very same book, ran her claw down the very same lists in reverse, and read the falcon home again.

"See what I did?" Tome said, tapping the book. "Caesar and Mask work *inside* a word, jumbling its letters. I never bother with letters. I trade whole words and whole meanings for the stand-ins in this book." He smiled, slow and warm. "And counting letters won't help a soul, because the letters were never the secret. The *words* were. The only way in is to hold the same book."



Tome grew up in a lighthouse-keeper's family, where messages crossed the dark water by lamp and flag. On a howling night there was no time to spell anything out letter by letter. So every lighthouse on the coast shared one signal book: a single long beam meant *all clear*; a red flag and two short blinks meant *rocks ahead, steer wide*. Whole careful sentences, folded into one steady flash.

Young Tome loved that book more than any toy. It meant his tired father could tell the whole coast an entire warning with one patient lamp — *if*, and only if, the far shore held the same book too. The book was the friendship between the lights.

Then one autumn a leak ruined a neighbouring lighthouse's copy, and for a whole week its lamp blinked out signals nobody could read. The beam was as bright as ever. It simply meant nothing now, because the shared book was gone. Standing at the rail watching that bright, meaningless light, Tome understood something he never lost: the code had never lived in the lamp. It lived in the book two shores held together. Without it, the brightest signal in the world was only light.



Grown, Tome carried his fat book the long, slow road to CipherForge. Cypher, the workshop's old keeper, waited behind a desk piled with jumbled letter-notes and set a fresh sheet down.

"Show me your way," Cypher said.

Tome laid the heavy book open with both hands. "Give me a sentence," he said. Cypher spoke one, and Tome traded its words for the stand-ins in his lists — a number here, a leaf there, a flower for a whole phrase — and passed the strip back. Cypher counted the letters in it, out of long habit, and the counting told him nothing at all. He tried to reason out a rule, and there was no rule to find. Then Tome slid a second, matching copy of the book across the desk, and with it Cypher read the sentence back in moments.

"The letters were never the secret," Cypher said, turning the book over in his hands. "It isn't a rule anyone can puzzle out. It's a thing two people have to *share*." He almost smiled. "Stay and teach it. Keep the shared book." Tome bowed, slow and deeply pleased, and hugged the volume to his cardigan.



In his classroom, every shelf crammed with little books, Tome liked to start by giving a pair of students one tiny shared book between them and letting them pass notes no one else could read. Two friends, a shrew and a vole, bent over theirs, giggling as their gibberish-looking strips turned into private jokes.

"Now watch what makes it work," Tome told the class, holding up his book. "One stand-in for a whole thing — a word, a name, a whole phrase. Both friends need the exact same book, or the message stays gibberish. Some books use numbers, some use innocent-looking pictures, so a note reads like ordinary chatter." He turned a page. "And this is the part to guard: your message can be perfectly safe, but if someone *steals the book*, the whole code springs open. The book is the real secret. Mind it like a treasure."

The vole raised a paw. "Can you make it even sneakier?"

"A CipherForge favourite," Tome said, delighted. "Take your code-word note and tuck it *inside* an ordinary letter — that's Hollow's craft. Now it reads like chit-chat, looks like chit-chat, and means something else entirely to the one friend who holds the book." The vole and the shrew immediately put their heads together to try it.



At the close of every lesson Tome did something quietly tender. He had the two friends who'd been passing book-notes all class lend their little shared book to the *whole room* for a moment — and at once everyone could read the once-secret notes, and the magic simply drained out of them, ordinary now.

"Feel that?" he said, gentle. "When everyone holds the book, the secret stops being a secret. A codebook isn't strong because it's clever. It's strong because it's shared by just the right two people." He gave the book back to its pair, and the warmth flooded right back into their faces — the cosy, particular gladness of a private language with someone you trust.

That gladness, Tome thought, hugging his fat book against his chest, was the whole treasure — not the pride of an unbreakable code, but the soft ache-and-warmth of *there's a language only my friend and I can speak*. His own book was heavy against his cardigan, worn from years of being shared, and holding it close he felt that quiet closeness settle in him, steady and sure.

Vigenère

*VIGENÈRE — *polyalphabetic keyword cipher; the Caesar-on-a-rotating-keyword pattern*. The cryptography primitive of *cycling through multiple Caesar shifts based on a keyword.**



Vigenère was a small magpie-tween. She moved with quick, tidy steps. A small, folded **keyword-tablet** was always in her hand. She had bright eyes and loved patterns that spun around.

She was small, yes. Her feathers were black and white, with a flash of blue when she turned her head. Her eyes sparkled like tiny beads. But the most important thing about her was that **keyword-tablet**. It was a special card. It showed a keyword at the top. Below it were many rotating Caesar shifts. Each letter of the keyword told her how much to shift a letter in the message.



This was super important. Vigenère showed everyone the **Vigenère cipher**. Think of it this way: Caesar used *one* secret shift for a whole message. But Vigenère used *many* shifts. These shifts cycled through a keyword.

She held up her tablet. "Let's say our keyword is 'KEY'," she chirped. "K means shift by 10. E means shift by 4. Y means shift by 24." She tapped the card. "If we want to hide the word 'CAT', we do this: Shift the 'C' by 10. Shift the 'A' by 4. Shift the 'T' by 24." She paused. "Then, if our message keeps going, we start the keyword again. The next letter shifts by 10, and so on."

"It's like having a whole team of Caesars," she explained. "Each one takes a turn."



But here was the really big secret. Vigenère *never* said her cipher was unbreakable. Not ever. She was very clear about this. "For hundreds of years," she would say, "people called my cipher 'le chiffre indéchiffrable'." She made a face. "That means 'the unbreakable cipher'." She shook her head. "They were wrong."

She tapped her tablet. "A smart man named Kasiski found the crack. That was in 1863. Another smart man, Babbage, found it around the same time. He just didn't tell anyone right away."

"They learned this," Vigenère continued. "If you can figure out how long the keyword is, you can break my cipher. You just split it into many tiny Caesar ciphers. Then you break each one using frequency analysis." She looked around. "It's all about the keyword's length. And how it's put together."

Vigenère taught many things about her cipher. These were her main lessons:

- **Keyword length** makes it harder or easier. A longer keyword is much tougher to break. If the keyword is super long and totally random, as long as the message itself, it's almost impossible to break. That's a hint for later, by the way.
- The **encrypting cycle** is how it works. You use one letter of the keyword for one letter of the message. When you run out of keyword letters, you just start over.
- **Decrypting** is the same. You use the exact same keyword. It just reverses the shifts.
- **Kasiski examination** is a cool trick. You look for letters that repeat in the hidden message. If you find them, the distance between them is often a clue. It's usually a multiple of the keyword's length.
- **Frequency analysis** comes next. Once you know the keyword length, you can split the message. Each slice is like a simple Caesar cipher. Then you can break each one.



Vigenère grew up in a small village. Her family had a special job there. They were the village's pattern-makers. They were magpies, just like her. Every season, they designed new patterns for the village festivals. Different decorations would spin and cycle through the days. This work taught her all about cycling rotations. She learned to see patterns everywhere.

When she was twenty-two, she walked all the way to CipherForge. Cypher, the leader, met her at the gate.

"What is the **Vigenère cipher**?" Cypher asked. His voice was deep.

Vigenère stood up straight. She held her tablet tight. "It's many Caesar shifts," she said. "They cycle through a keyword. It's stronger than Caesar's cipher. But it's *not* unbreakable." She took a breath. "Kasiski found the way. You use frequency analysis on slices. The keyword's length is its biggest weakness."



Cypher nodded slowly. A small smile touched his lips. "You are appointed," he said.

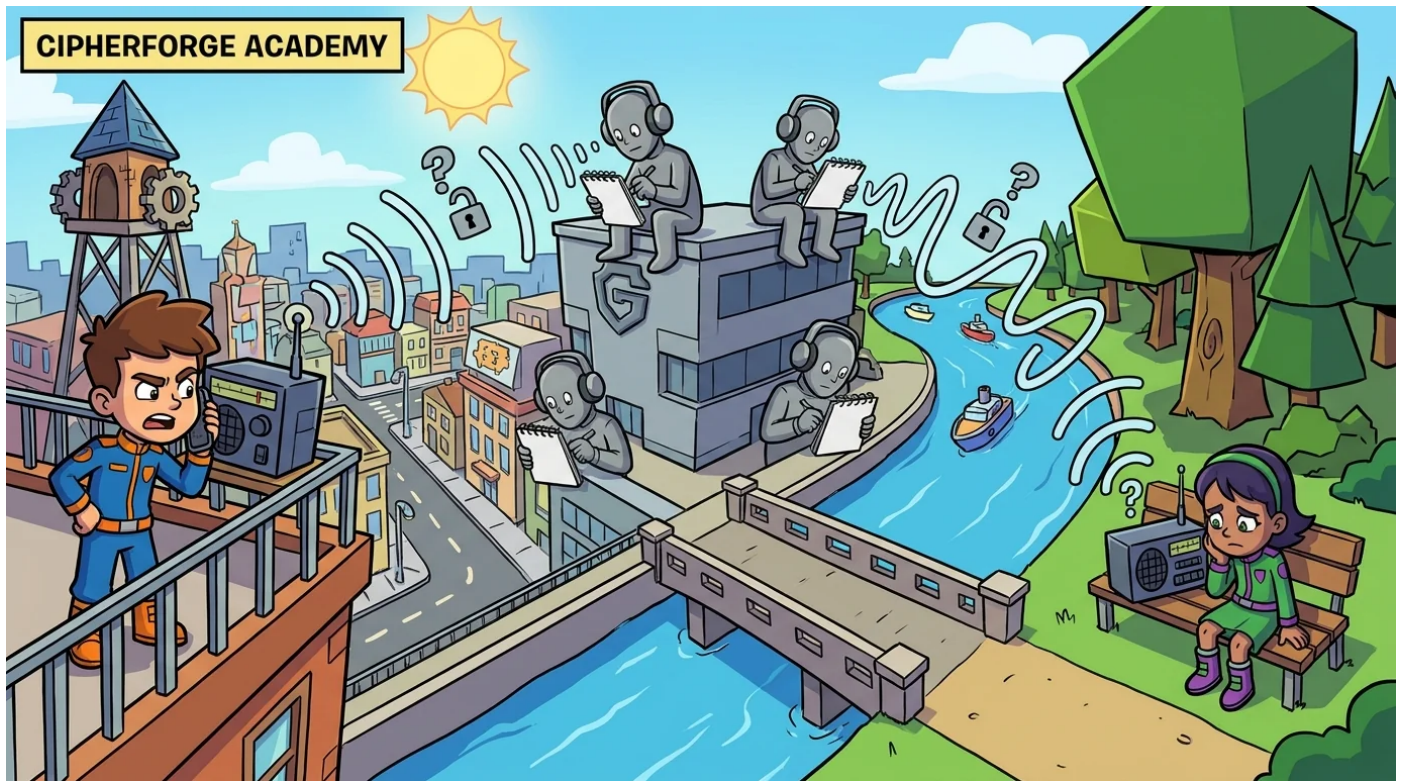
Vigenère often repeated her most important lesson. She made sure everyone heard it. "My cipher was called unbreakable for centuries," she'd say. Her voice would get a little louder. "Then Kasiski found the crack. He showed everyone it could be done."

She looked each person in the eye. "No cipher is unbreakable forever. Not one. Cryptography is like a moving river. What's safe today might be broken tomorrow. That's the real lesson."

"It's not hard to understand," she would finish. "It's just **cycling Caesar shifts**. It's strong against simple frequency analysis. But it's weak against Kasiski's trick and sliced frequency analysis." Then she'd tuck her tablet away and smile, feeling calm and glad — happy that no puzzle stays a mystery forever, and that there's always something new waiting to be figured out.

Swap and Meld

key exchange — two parties build a shared secret over an open channel; each combines a private value with a public one and swaps results, then re-combines, arriving at the same key an eavesdropper who saw every message still cannot reproduce

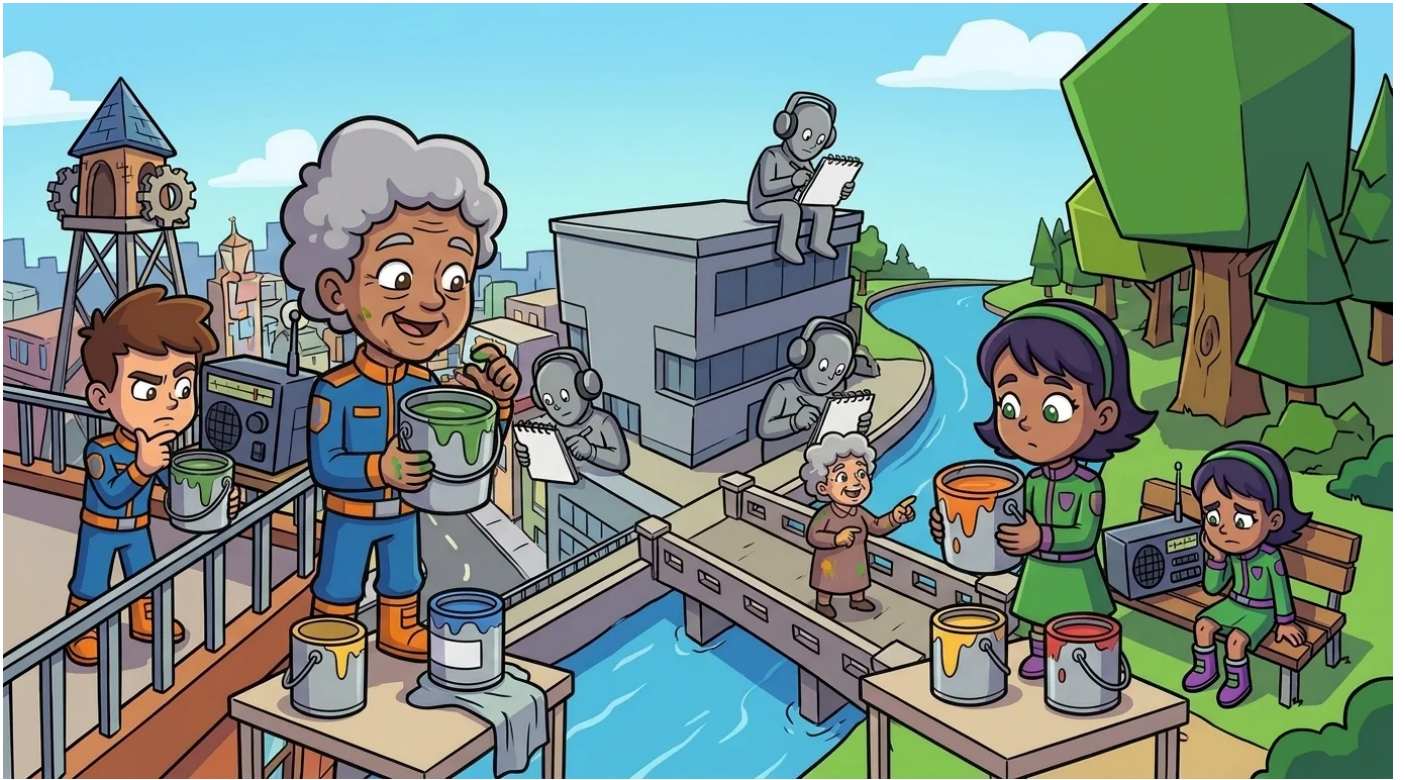


The two junior agents of the CipherForge academy had a problem that felt, at first, completely impossible.

Swap and Meld had been posted to opposite ends of the city, and the only way they could talk was the academy's open radio — a channel that *everyone* could hear, including, without any doubt, the Gray Agency listening from across the river. Their mission needed a secret key: a number only the two of them knew, so they could scramble their real messages. But how do you *agree* on a secret when every word you say is heard by the very people you're keeping the secret from?

"We can't just say the key out loud," Swap radioed, frustrated. "The Gray Agency would write it down."

"And we can't meet to whisper it," Meld radioed back. "That's the whole point of the mission." She stared at the radio. It felt hopeless — like trying to pass a note across a room where everyone reads over your shoulder. A secret you have to build *in front of your enemy* seemed like no secret at all.



Their instructor, a retired cryptographer with paint-stained fingers, set two buckets of yellow paint on the table — one in front of each agent — and a locked cabinet of private colors.

"Yellow is public," she said. "Shout it from the rooftops; the Gray Agency can have all the yellow they want." She unlocked the cabinet. "But each of you picks *ONE* private color and tells *nobody* — not even each other." Swap chose a deep blue and hid the can. Meld chose a bright red and hid hers. "Now," the instructor said, "mix your private color into your public yellow, and *swap the buckets over the open radio*. Let the Gray Agency watch you carry them across the bridge. It won't help them."

Swap mixed blue into yellow — green — and sent the green bucket across. Meld mixed red into yellow — orange — and sent the orange bucket back. Everyone, everywhere, could see one green bucket and one orange bucket crossing the bridge.



"Now the trick," the instructor said, eyes twinkling. "Fold your *own* private color into the bucket you just received."

Meld took Swap's green and stirred in her secret red: green + red-and-the-yellow-already-in-it became a deep muddy brown. Swap took Meld's orange and stirred in his secret blue: orange + blue-and-its-yellow became — the *exact same* muddy brown. The two agents held up their buckets, and the colors matched perfectly.

"That brown is your key," the instructor said. "You built it together, out loud, in front of everyone — and the Gray Agency *cannot make it*." Meld frowned, working it out. The enemy had seen yellow, and green, and orange. But to mix the final brown you needed one of the *private* colors, blue or red — and those had never crossed the radio at all. "They'd have to un-mix a bucket of paint back into its exact ingredients," the instructor said. "And you can stir paint together in a heartbeat, but no one alive can stir it *apart*." A secret, built in plain sight, that only the two mixers could reach.



Swap laughed out loud. It was the most wonderful thing he'd ever seen.

"So we *broadcast* everything," he said, "the public color, both mixed buckets, all of it — and the secret still only lives in the two of us, because it needs the two colors we never sent." He and Meld ran it again with numbers instead of paint — a public number everyone knew, each folding in a private number, swapping the results, folding again — and landed on the identical secret number, while the instructor, playing the eavesdropper, scribbled down every value that crossed the channel and still couldn't reach it. The one-way nature of the mixing was the whole magic: easy to combine, impossible to separate. Two agents. One key. Built entirely in the open.



That night Swap and Meld ran their real mission, scrambling every message with the muddy-brown key the whole city had watched them build and nobody else could hold.

And Meld noticed the feeling that had crept in to replace the morning's hopelessness — a light, buzzing delight, the particular joy of a problem that had seemed airtight suddenly springing wide open from one clever angle. She keyed the radio and, just to be cheeky, sent the Gray Agency a friendly "good evening" in plain text. Then she and Swap went quiet on their shared secret, two agents a city apart, warmed by the same private brown, grinning at the beautiful trick of a key you can shout into the open air and still keep entirely, wonderfully to yourselves.

About Spark & Anvil

Spark & Anvil is a 501(c)(3) public charity. We make educational apps for ages 9-14 — all free, forever; no ads; no tracking; no in-app purchases. CipherForge is one of 140+ apps in the portfolio.

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- **CuriosityQuest** — Texas geography exploration through Linger, Notice, and the Lantern in the Dark
- **QuillSpell** — spelling craft through the Word Wizard cast
- **SynaForge** — sensory-affirming creative tools through Lull, Soften, and the Quiet that is Also Creating

Methodology

Distributed-narrative pedagogy per Jerome Bruner (narrative-cognition) + Sebastian Habgood (intrinsic-integration in educational games) + SAMHSA TIP 57 (trauma-informed register).

Trauma-informed-design framework per Eggleston et al. (2025) and Stoltenburg et al. (2024).

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