



All the King's Horses

"What the King *wants*," said the alchemist, "is a more convincing fake."

I was in awe of his confidence. Perhaps quicksilver was as corrupting as the Guild said. "How dare you suggest the King does not have an eye discerning, scales precise, assayists more learned—"

I doubled over as a bar of gold worth a year's salary hit me in the chest. "This all may be so," replied the alchemist, "but there is always room for improvement."

I caught my breath and tried to hide my surprise as I hefted the ingot. "I can't take this and I'm sure you know why," I explained. Gesturing at the alchemist's face with my occupied hand, I continued, "I'd recognize those goggles anywhere; bronze and obsidian is a bold choice." In feigned concentration, I held the ingot close to my eyes. I was looking slightly past it, appraising the alchemist's expression more than the gold. "A few years ago, a woman wearing those goggles emerged from the Guild complex and offered

me a substance almost—but not quite—entirely unlike gold, sharply faceted and smelling of brimstone. Next year, they were worn by a short man with shaky hands. His ducats looked the part, but dulled as I rubbed my fingers against them. And according to the King’s ledger, last March the Alchemists’ Guild paid its due in gold that [fizzed](#). It took us ‘til June to realize our superstitious merchants don’t deal in currency they can hear.”

The alchemist was a blank wall, so I turned my attention towards the ingot. Despite the Guild’s reputation, it seemed perfect. If anything, it was purer than most. The King’s hallmark was already stamped into the bar; alchemy must not have been the humorless profession I thought. I turned it over in my hands, still looking closely for the signs so obvious in past dealings with the Guild. I saw none. Beneath the alchemist’s prim expression, I sensed a hint of pride.

As I examined the ingot, he spoke: “Last year you noticed a... discrepancy... rather quickly, yes?” I felt he was pausing minutes between sentences, inspecting me as closely as I inspected his handiwork. “Yesterday, we could fool the average catchpole.” I imagined my dullest coworkers carting away piles of sulfurous, crystalline, worthless minerals, wearing the grin of someone who is about to be very, very rich. “Today, we can fool you.” The alchemist took the counterfeit from my hands and replaced it on his workbench.

“Tomorrow, we can fool the King.”

Soaked to the bone, I walked to the outskirts of town on roads that turned from brick to cobbles to dirt to mud. I was relieved to finally pass the threshold of the alchemist’s workshop bordering the Guild complex. I found myself in a familiar, but empty room, quite warm though I saw no hearth. I slung a sack of coins off my back onto the scarred wooden table from whence they came and turned to lock the door behind me. As I fought with its mechanism, my co-conspirator had emerged from further within the complex and sat down at his workbench in disquieting silence. Elbows propped against the table, he held a coin inches from his goggled face, unmoving. I pulled up a chair and

sat down opposite him. I couldn't tell if I still had the alchemist's attention—I wasn't sure he could *ever* be distracted from his work for more than a moment—but I had to explain myself. The Guild was not someplace to stop for a casual chat.

“Somehow, the King knows,” I said. “Ten thousand ducats, five thousand yours. I sure as hell couldn’t tell them apart. Gave them to the chamberlain as usual. He comes back with exactly five thousand ducats, warns me they’re counterfeit. I’d have thought we were safe for another year or two.”

The alchemist let the coin fall from his fingers back into the open sack on the table and clasped his hands. He looked down at the coins, and suddenly I felt heat radiate from the still-damp bag. The alchemist’s goggles fogged over as steam rose from the bag as if it were a soup dumpling made by King Midas. The alchemist looked back at me, not panicked so much as annoyed. “This table is not waterproof. For your reference.”

“You don’t seem worried about our operation.”

The alchemist didn’t move a muscle. “No.”

“Shouldn’t you be?”

“No. There is *always* room for improvement.” The alchemist paused as if thinking something over. With one hand, he pulled his ever-present goggles off his face and offered them to me. I carefully put them on, though they barely fit and pinched the bridge of my nose. To the alchemist, there would have been no greater slight than to refuse them. Though they were opaque from outside, my vision was no darker having donned the goggles.

For once, I knew for certain the alchemist was staring at me. “Everything I know about the Art, I learned from Master Ionedá. He was a good teacher. Meticulous. Laconic.” *Apple doesn’t fall far from the tree*, I thought. The alchemist reached under his workbench and produced a bronze retort resembling a metal kiwi bird. “I never use this. Nor alembic, nor crucible. Decoys, in essence. One only needs the goggles.”

“Ionedá was the founder of an unorthodox branch of alchemy,” he continued, eyes darting across the table, never to land on me. I wondered if he felt naked, in a way, without his goggles. “It began with the goggles. I have no idea how he made them; I merely use them.” The alchemist stood up and started to pace. “In short, they grant wishes.”

“So wish for gold. Real gold.”

The alchemist gave me the disappointed look of a teacher whose pupil just asked if brown cows make chocolate milk. “They are... particular... about how they are granted,” he said. “In my teacher’s teacher’s teacher’s time, a [star](#) appeared beyond all constellations, with such radiant light she could see her shadow in the dead of night. Ionedá was obsessed with replicating it. I often found him lying on the roof of his workshop at night, goggles on, straining to hear the music of the spheres. The patch of sky he had stared at for years remained dark, but Ionedá insisted when concentrating he could almost see his star twinkling. Ironically, it was Ionedá’s failure which taught him to use the goggles.”

As he talked, Ionedá’s former apprentice was fishing lead blanks from a chest in the corner of the room. He weighed each one in his hand, letting most of them drop back into the chest. Eventually, he found one roughly the size and shape of one of our ducats, and set it down on the workbench in front of me. “Turn this into gold,” he commanded.

The alchemist might as well have asked me to turn the moon into cheese. Clueless where to begin, I closed my eyes and wished for the transmutation as if I had just tossed a coin into a wishing well. It was obvious nothing was happening to the blank in front of me.

“The goggles are powerful, but limited. Ionedá said to focus one’s mind on the difference between the world as it is and the world one tries to create.” I attempted to summon my inner Ionedá, from the little I knew of him. I focused entirely on the lead blank. From the periphery inwards, my vision slowly dimmed until I saw only the blank. Distracted by the effect, I nearly lost my concentration. For a minute which felt like an hour, I meditated on the reddish-yellow luster of gold while remaining focused on the lead piece. Slowly, the piece lost its dull grayness and became the gold ducat it was destined

to be. Satisfied, I slowly closed and opened my eyes. The blackness retreated from the coin and soon after the edges of my vision. “Tell me again why this is so difficult,” I said.

Wordlessly, the alchemist set a small slate tablet and vial of liquid on the table. He gingerly took one of his ducats from the sack I returned with and scraped it against the tablet, leaving a streak the color of hay. He did the same with my ducat, which left a dull gray streak against the slate. He angled the tablet towards me. “A touchstone.”

I was indignant. “For twenty years I have been this town’s taxman; you think I have never seen a touchstone? I could tell fineness by sight of the coin, let alone its trace.”

“Yes. But your coin,” the alchemist replied, tilting the slate towards me, “is not very fine.” He cracked a slight smile for the first time in the last year. “Zero karat, perhaps?” He offered me the coin. I set it near the edge of the table and leaned over the workbench, staring down at the coin, head cradled between my hands. My vision began to darken again, until only the coin in the center remained...

Sorry for the abrupt cutoff! This is as far as I’ve written. I have some ideas for what happens next though:

The alchemist continues teaching the tax collector how to work the goggles; he gets half decent but not good enough to make the yearly counterfeit tax payment. The trick is to manually enumerate each of the properties the “gold” must have, because the goggles are not smart enough to know what “make it gold” means, and even if they were, the user’s knowledge of what gold is may be imperfect. For example, if the alchemist was not aware of a certain assaying method when transmuting lead into gold, the counterfeit gold would behave like lead. The reason the goggles do this is because *it’s easier/less improbable for the user’s brain to be rewired* to see the coin as gold (especially with some wishful thinking on the part of the user) than it is to add a few protons to every atom in the coin (assuming rearranging some existing neurons in the relevant areas of the visual cortex takes less energy than probability-driving protons out of the quantum foam). The goggles are bad at interpreting thoughts/instructions but really good at navigating outcome-space. For example, if the alchemists knew how to phrase it, they could wish for a gust of wind to blow a windsock north if the Poincaré conjecture were

true, and south if it were false, and the goggles would just barely be able to do it. The alchemists have to learn about reality to constrain the wish to the goggles tightly enough that the goggles are forced to “actually” turn the coin to gold...or so they think.

The counterfeiting scheme has worked for a few years; needless to say by this point the fake gold is really good. But they know the gold is counterfeit. How? It's not like the king (or even his chamberlain, who handles the money) knows more about gold or assaying than the alchemists.

Stumped, the tax collector heads home. The tax collector's vig from the conspiracy (i.e. some of the alchemist's “gold”) has improved his & his family's living conditions. They get nervous without the counterfeiting conspiracy they'd have to get rid of luxuries they'd grown accustomed to (whatever's the 13th-century Venetian equivalent of a BMW with 30% APR). He's petting his cat and has a sudden realization...

The tax collector does a mission impossible type thing and spies on the chamberlain separating the counterfeit and real gold. He's letting trained horses sniff the coins; the horses' brains are different enough from humans' that as long as the goggles are frying brains instead of “actually” transmuting the coins, they can tell them apart.

(Perhaps “offscreen”) The alchemist and the tax collector regroup and make a new batch of coins, stipulating that horses should like them too. It's hard because they have to sort of get in the mindset of a horse/develop some sort of empathy for them, unlike for human brains where the mapping is more clear. The King notices nothing wrong with that year's gold. (Nit: I think elsewhere in the story I mention taxes collected around every 6 months? This duration works better for the story. Actual taxes/dues/etc. were collected more frequently than once a year in the 13th century in this area IIRC.)

The alchemist falls ill and he's the only one who can really work the goggles well enough to make the counterfeits. The tax collector takes him to the mysterious old wizard healer person (if this isn't too cliché idk probably is) who--twist!--has the same type of goggles (ok definitely too cliché), albeit a bit worse for wear. The alchemists had never considered/immediately wrote off the possibility of using the goggles for medicine so this is big.

At the end, tax collector is caught by the king. Has a “debate” of sorts over whether fake gold like gold in every way counts as gold. "So you see king, this really is real gold, don't behead me." Long conversation about this stuff Dostoevsky style.

“Scratch work”

Name the characters?? I am very bad at this.

I am almost certain the goggles’ function is consistent as written (essentially telepathic outcome pumps with bounded compute and, like, “probability-warping energy”); double check this. Elaborate on how trying stuff out with the goggles (and if it’s logically impossible it won’t happen) substitutes for the scientific method among the alchemists. They may never need to invent the latter.

I visualized the golden traces it should leave on the alchemist’s touchstone, with the
TODO

“You asked the goggles for a coin that *looks* exactly like gold. Not a coin that *is* gold.”
With two fingers, he slid my coin back towards me. “Now focus on TODO

“The goggles are not magic! They are alchemy.”

This is to be expected. Ionedá took months to master basic transmutation.

The alchemist cleared his throat and continued his lecture. “Many things are possible. What unites all possible things is that they are *consistent*. A coin cannot land both heads and tails, as demonstrated by Arch-Alchemist Llull. But there are subtler inconsistencies. Arch-Alchemist Thomas Newton has discovered universal principles governing the motion of bodies. Thus a coin launched with a certain force through still air must land heads. *Must*. Perhaps someday these discoveries will be public. For now, they are among our most valuable secrets.