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**Russell Roberts: The Price of Everything**

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OUT OF CONTROL

*Some say Ramon's father was the greatest baseball player ever to come out of Cuba. Some say he was the greatest baseball player, ever, period, full stop, no qualifiers. In the stories the mother tells, Jose Fernandez always wins the game with a home run or a diving catch or a throw to the plate from center field on a line that was as straight as a dart or an arrow or a gunshot or a frozen rope. The crowd chants his name over and over until he emerges from the dug-out and tips his hat. All of the stories she tells are true. Her father was an accountant for the national team and as a girl of fifteen, she saw her future husband for the first time when he went four for five and went to the wall with perfect timing and turned a home run into an out. He was twenty-one and already a man among boys.*

*In his prime, even past his prime, men approach Jose Fernandez with promises of riches waiting for him in America if only he will come to the Yankees or the Reds or the Dodgers. They tell him of his teammates who have left and how they live—the good American life with a big house and a fancy car and anything else the heart or head desires. But he stays. Cuba's fortunes rise and fall, but still he stays. He retires holding every significant batting record in Cuban baseball. Castro makes him an ambassador for the game on the streets of the capital and in the small towns. Only Castro can draw a larger crowd on a stroll through the streets.*

*When Ramon is born, there are celebrations throughout the island. Even the Great Leader sends flowers and best wishes for*

*the boy's future. When the baby comes home from the hospital, Castro comes to the house. There is a picture in the paper of Castro holding the infant, beaming.*

In Ruth Lieber's office, bookshelves went floor to ceiling and on some of the shelves, the books were lined up two deep, with more books wedged sideways into the gaps above the books. In the middle of the room, ziggurats of books soared up from a large library table.

Every decade or so, to the amusement and teasing of her colleagues, Ruth cleared off her desk and the table in the center of the office. One September, years ago, shortly after she had done a summer cleaning and the office was fairly tidy, Ruth found a student sitting at the table reading, sipping a cup of coffee. She recognized him as one of the new graduate students. She sat down behind the desk and waited for him to introduce himself, to tell her why he was there. But minutes passed in silence, Ruth waiting, the student reading. Finally Ruth asked if she could help him. It turned out that he had thought her office was the departmental library. He thought he'd sit and read for a while, do a little work.

It became a famous story in the department, but the story was more than a tribute to the number of books Ruth owned and the peculiar habits of first-year graduate students. In a real sense, Ruth's office was the department's library and Ruth was the librarian. Ruth had actually read most of the books and even remembered most of what was in them. So in the pre-Internet age, asking Ruth to find a quote or a fact was the closest you could get to Google.

This was one of those years when the table was covered with books, the desk was covered with books, there were

even books piled on the floor, a cityscape of books, a skyline towering everywhere. Ruth sat at the desk, embraced by her library, preparing for her first lecture of the spring quarter. Her mind kept wandering as she thought about how strange it was to be teaching her last economics course.

She had been at the university for over forty years. Most of the time, she had been a professor of economics, doing research in American economic history. In the middle of her career, she had made a conscious decision to be more of a teacher than a scholar. In many economics departments, there is one exceptional teacher who teaches the large introductory classes to hundreds of students each year. Ruth was that teacher.

Late in her career, she had become provost. She really had no time for teaching, but she insisted on doing it anyway, one class a year, a senior seminar limited to twenty students. She planned to retire in the fall, so this was her last class.

Entering the classroom, she took the seat nearest the blackboard at the head of the massive oak table that took up most of the room, and introduced herself. Then she took a pencil, a newly sharpened Dixon Ticonderoga #2, out of her briefcase and put it down on the table in front of her.

“No one can make a pencil.”

Ruth let the statement sit there. She looked at the students' faces. They weren't quite sure how to react. Was she challenging them? Kidding them?

A student raised his hand.

“Your name?” Ruth asked.

“Josh.”

“What do you think, Josh? True or false? Agree or disagree? No one can make a pencil.”

“Seems silly,” he said, taking a chance, then added, “with all due respect. You can buy pencils at the campus bookstore and all over town. People leave them lying around. They’re practically everywhere.”

“Can you make one, Josh?”

“What? A pencil? Of course not.”

“Why of course not?”

“I’m twenty-one years old, I’m—”

“Do you think I could make one?”

Josh took it as a rhetorical question. Two down, another 6 billion or so to go, he thought to himself. “We’d probably have better luck visiting a pencil factory and looking for some better candidates,” he said.

“Actually, I have visited a pencil factory,” Ruth said. “No one there knows how to make a pencil, either. What do you think you’d find in a pencil factory?”

“A bunch of people making pencils.” The class laughed and everyone relaxed a little bit. “A bunch of pencil-making equipment,” Josh continued. “Some wood. Some lead. Some erasers. The people put them together. How hard could it be?”

“Ever wonder how they get the lead in there?” Ruth asked.

“I don’t know,” Josh said. He’d never thought about it. But he took a stab anyway. “They probably take a piece of wood, shape it like a pencil and drill a hole, drop in the lead. No?”

Ruth was shaking her head. She reached down into her briefcase again and pulled out what appeared to be a thin piece of wood.

“There’s only one place in the world that makes these cedar slats and sells them to pencil factories. In the factory, they put ten narrow grooves, each the width of a pencil lead, into each slat, like this.”

She reached down into her bag and pulled out a second cedar slat with ten grooves cut into it.

“Then they put a little glue in the grooves and lay a lead in each groove. Of course it’s not really lead, it’s graphite. Anybody know where graphite comes from?”

Nobody answered, so Ruth continued.

“It’s found underground in Sri Lanka, in Mexico, in China, in Brazil. At the pencil factory, they mix it with clay from Mississippi and a little water and bake it, if that’s the right word for cooking something at 1900 degrees. Then they roll it out and cut it so it’s the right length. Voila! What we call pencil lead. They put the lead in these grooves and then they take another grooved cedar slat and lay it on top. A lead and cedar sandwich. It looks like this.”

She reached down again into the briefcase and pulled out another piece of wood.

“What I really wanted to bring back from the factory,” Ruth continued, “was the pencil in the lobby. Maybe 30 feet long. A perfect super-jumbo replica of a real pencil, down to the eraser. Just in case Paul Bunyan or King Kong stopped by and needed something to write with. Now look at this cedar sandwich. There are ten pencils imprisoned in here. We need to set them free. So they pass this sandwich through a special saw that carves the pencils from this block. First they cut off the bottom so it looks like this. Can you see the pencils peeking out? These are going to be classic six-sided pencils. Here you can see them half-cut. Then they turn the slat upside down, pass it through the saw again, and ten pencils emerge. Then each one gets painted three times, that beautiful canary yellow. Ever notice how there’s never any paint smeared on the end you sharpen? How do they paint it so perfectly?”

“They use special tiny brushes?” Josh guessed.

“That’s right. A gnome casts a magic spell on some elves. The elves, entranced, use the brushes to get it just right. Actually, they make the pencil a little too long. After they paint it, they slice a titch off the end so that it looks clean. I love that! Isn’t that marvelous? Better than elves! But they don’t worry if the other end is a little sloppy because the customer never sees that end—it’s covered up by the little piece of aluminum and the eraser. After the aluminum and the eraser, they stamp the green letters on. That neon green you see in the body of a fly if the light’s right. But you know what my favorite part of the whole process is? The cedar shavings. When they carve out the pencils from the cedar sandwich with the three-sided saw, one side at a time, little bits of cedar are left behind. The EPA won’t let them just throw them out. So, you know what they do?”

“Build little cedar houses for the elves?” Josh joked.

“You’re getting into it, aren’t you, Josh? But no, instead of having to dispose of them the way the EPA demands, they get turkey farmers to come and pick up the shavings—they use them for bedding for the turkeys. Turkeys like sitting on those shavings, so the farmers are willing to come get them. The pencil company has to get rid of them, so they save money on disposal. There’s something poignant to me about those comfortable turkeys sitting on that luxurious cedar bedding in October, totally oblivious to what happens toward the end of November.”

Ruth paused and looked around the room.

“A simple pencil,” she said, holding up the pencil and turning it this way and that in the winter light streaming in from the giant windows lining the wall. “Is there anything

simpler? Yet the making of a pencil is almost—” She paused to find the right word. “Magical. Is it absurd to call something so simple and mundane, magical? But it’s an achievement on the order of a jazz quartet improvising a tune when the band members are in separate cities. Something that on the surface seems impossible, but somehow, comes together. What’s your name?” Ruth asked, pointing to a girl sitting in the back who looked distinctly unimpressed.

“Andrea.”

“What do you think, Andrea. Magical or not magical?”

“It’s nice, Professor Lieber. But it’s just a pencil, isn’t it?”

“Are you sure? Is that your final answer? Just a pencil? Start with the plain, simple slat. A cedar tree in California has to be chopped down, then taken to a mill. They fashion that tree into a slat. That seemingly simple act of chopping down the tree, getting it to the mill, and planing and shaping the wood—that takes thousands of people who work in the woods, who build the saws that work the trees, who drive the trucks that carry the timber, who make the trucks that the trucker drives, who work in the mill that shapes the logs, who make the machinery in the mill. And that’s just the wood. Then there’s the graphite that goes into the lead. Countless people in Sri Lanka, say, are at work, carving it out of the ground and getting it to the factory. The aluminum ferrule is from Japan. The eraser is synthetic rubber from Korea or sometimes Canada. And the lacquer that gives it that nice sunshine shine—that’s from Tennessee or New Jersey. Those are just the basic components. And when it gets to the factory, there are all the people who work putting the pieces together. They use machines designed and created by another huge group of people. No one person could do all

that. It would take thousands of lifetimes. No one can make a pencil.”

“So a lot of people work on a pencil,” Andrea said. “People specialize. What’s the big deal? Where’s the magic?”

“Who commands the army?”

“What?”

“Who commands the army?”

“*What army?*”

“The army that worked to put this pencil together. Who’s in charge? Where’s the general of this army of effort? Where is the pencil czar? Who is it?”

“Why would you need one?” Andrea asked.

“Every year, the right amount of cedar is cut to make all the pencils, the right amount of graphite gets pulled out of the ground, even though both of those products are used for a thousand other things. Why is there always enough to go around? The waitress never says to the truck driver, ‘Sorry, hon,—we’re out of coffee today.’ The mill never runs out of cedar. And when you show up at the campus bookstore in September or even in January, there are always plenty of pencils to buy, whether you want one or a dozen. The bookstore never says, ‘Sorry, we’re out of pencils, but come back in July, our supplier expects to have some then.’ And that’s just the beginning. Who decides how many people are going to be in this army? Who decides what their jobs are? Who tells the people all over the world who work on the parts of the pencil what to do and when? Who makes sure that all the workers do their jobs well? Somehow, a million people spread out over the face of the earth work together. But no one coordinates that effort. The Sri Lankan graphite miner never communicates with the truck driver bringing the

cedar into the pencil factory. That's why it's something akin to playing jazz with three other people spread out across the country. There's no script. No score. No conductor. Isn't that extraordinary?"

The class was quiet. They weren't sure how to respond. Rapture from a teacher in the classroom was unusual. Rapture about a pencil was off the charts.

"To notice it," Ruth continued, "to notice the magic of a pencil, it's not enough to pay attention. The magic is hidden. It's a sort of silent music, the music of the pencil. But you can hear it in your head, once you understand it. The source of the music, the source of the magic is what Adam Smith called 'the propensity to truck, barter, and exchange one thing for another.' Smith understood that order can emerge without someone being in charge to impose the order from above. Just from people buying and selling with each other. You can have a system that is organized without an organizer. What holds this system together? What creates the web of cooperation between all the different people who had a hand in getting this pencil into my hand? Yes, your name?"

"Amy. Can I ask a question about your question?"

"Sure."

"You say that no one's in charge. But that pencil factory you went to had a boss. The workers don't just show up, do their own thing and voila! A pencil emerges! There's someone ordering the wood, someone ordering the aluminum, ordering the rubber, hiring workers, supervising the workers, deciding what to pay them, sometimes firing workers. Someone decides whether to buy graphite or make it at the factory. It's not really spontaneous. Someone's in charge."

"It's an illusion."

“What do you mean?” Amy asked. “That people have a lot of autonomy in an organization?”

“Oh, that’s true, too,” Ruth responded. “But I meant something more complex. I meant it’s an illusion that the boss is in charge. It looks like the boss gets to decide who to hire and who to fire, what to pay people and whether to have a cedar farm or buy cedar from another company. The boss doesn’t even get to set the price of the pencil.”

“But if it isn’t the boss making those decisions, who makes them?” Amy asked.

“No one.” Ruth stopped talking for a moment and let that sink in. The room suddenly seemed very quiet. I love teaching and I love economics, Ruth thought to herself. “Understanding how that can possibly be true is what we’re going to spend the rest of the quarter trying to understand,” she said. “In the meanwhile, homework!” She paced in front of the class. “For next class, think of something from the world around us that is self-organized. Find something that shows order or purpose even though no one’s in charge of it. Look around. It’s everywhere.”