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## ReTool Transplants 有限责任公司

*Keith 'Doc' Raymond*

Liselle slammed her fist into the counter. She looked up at her husband as they both stared at the holographic image, and said, “Even with donor-derived cell-free DNA percentages near zero, your chance of rejection is high and your life expectancy is only fourteen years.”

“Unacceptable!” he answered, leaning over her shoulder in disgust, a drop of spittle collecting on his lower lip. “I didn’t build an empire just so my heart could stop me before I fulfill my twenty-year plan.”

Claude’s phone chirped, announcing a text message from UNOS, “Match is available. Acknowledge acceptance, then proceed to Branson Deaconess Medical Center. Time limited offer. You have twenty minutes to accept.”

“Don’t pass up this opportunity, Love.”

“With these stats? They only want me because I can pay for the anti-rejection drugs. You saw the report in the Times. UNOS is prioritizing those with the ability to pay. Insurance companies have defaulted on transplant patients’ medications because of monthly costs. It’s a double scandal suppressed by the corporations.”

“We have ah ... eighteen minutes to decide.”

“Find me an alternative. Where’s that useless kid of ours? Natches?!”

Natches' head appeared in front of the holographic stats they were just reading. A cloud of images floated around his head, "Wot, Pops?"

"Your father wants you to troll the Dark Net for transplant services."

"That's old school, Mom. Got to dig deeper. Black Web sits two layers down. Wait, is this entrapment? I'm not down for being set up. Sick of being grounded."

"Serious, son. Natches, work your magic. No retribution, and an allowance bonus if you pull something up quick," Claude said. He looked out at the gray sky from their chateau outside Paris, praying for a better alternative.

Natches rubbed his hands together greedily. Then his fingers were flying up and around his face as the cloud of images and data changed rapidly. His parents stared in wonder at the speed with which he worked. Gelled turquoise hair seemed to spark at the ends. His facial tattoos illuminated, then darkened.

A girl's head, then another boy's, appeared in the floating image, their expressions changing as they added their dexterity to the web dive. Six fingers manipulating virtual space, checking and rejecting sites. There was a moment of pure white out, then several flashes, then they were back at it.

"Here, check it," the girl with silver hair and red cat's eyes paused. The three of them directed their eyes up and to the right. Six eyes read a script in saccades going back and forth, tracking down.

“This’ll work,” Natches barked. “Check it, Parental units.” Natches seemed to throw the screen at his parents. The image ballooned open in front of Claude and Liselle’s faces.

Ironically, their parental controls slashed across the website, forbidding entry. Liselle had to allow the viewing that their kid clearly somehow circumvented.

**ReTool Transplants.** Beneath the banner flashed a second banner in red: Illegal, Dangerous, Expensive, yet Effective.

What followed was a load of disclaimers, arrest risks, and limited liability conditions in multiple languages. Then came a great deal of information, most of which required a sub-specialty in transplant medicine to fully appreciate. Liselle kept nodding. Clearly, she did most of the research, familiarizing herself with the details of the heart transplant her husband needed. Claude didn’t bother, too busy with building his construction empire.

She turned to her husband with three minutes to spare. “If their claims and success rates are reliable, you need to do this. ReTool is transplanting just about everything, including limbs.”

Claude’s face ran through a series of micro-expressions reflecting the inner workings of his mind. Then he said, “Fourteen years isn’t long enough to do what’s needed. Let’s go with ReTool.”

She pinged the contact link, opening a video channel to an attractive young Chinese woman. She began speaking in Cantonese, then seeing the western faces switched seamlessly to English. “Mr. and Mrs. Laurent, greetings ...” the woman’s

eyes drifted down and to the left. “Good. You are pre-approved for a transplant. When can we expect you, and who will be the recipient?”

“I need a new heart,” Claude answered, both he and his wife surprised at the speed of the financial clearance. “As soon as possible.”

“Very good. I have you booked first class on a suborbital shuttle. Visas will await you both on arrival at the international terminal in Guangzhou. You can use your own transport, of course, but we believe this will be the fastest route.”

“That’s acceptable,” Liselle answered, after nodding to Claude.

“Will your son, or any servants, be accompanying you?”

Natches shook his head wildly, juddering the data cloud around his head.

“No, just us,” Liselle answered.

“Thank you for contacting ReTool Transplants. We have updated your account, and we will see you soon.”

UNOS texted, demanding an answer. Deaconess texted, reporting Claude’s bed allocation. He responded to both simultaneously, “Thank you, but no thank you.”

“Party at the Mansion!” cried Natches.

“Not if you plan to spend the rest of your college education in cryosleep!” Claude barked.

“Aww, Dad.”

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A Hongqi L5 with a V12 internal combustion engine burred beside the sidewalk, waiting for them at Arrivals. ReTool personnel met Claude and

Liselle at the ramp (no sign) and escorted them through Immigration. The chauffeur loaded their bags into the limousine trunk. The woman they had spoken with on the vid link was their escort. In the electric vehicle age, the Hongqi drew stares both of wonder and derision.

They had expected to be taken to a high-tech high-rise facility in downtown Guangzhou, but to their surprise, they were driven out of town and into the countryside. Liselle anxiously watched out the window as rice fields passed. Paved highway became dirt road, moving them from the bright future back into a living past, as oxen drove plows through mud. Someone set them up—Natches?

While passing through a village, they stopped at a storefront, a country market selling fresh fruits and vegetables. Everything was labeled in Mandarin except a small wooden sign in English, ReTool Transplants, nailed at the side of the door frame. The store owner bowed to the young Chinese woman, who led the couple through a beaded curtain into the back.

Claude and Liselle saw their imminent end, as a meat cutter with a bloody apron slammed a cleaver into a cutting board.

“Sorry for the theatrics,” said the woman, clicking the implant at her temple. A portion of the wooden floor lifted, and a gleaming elevator rose. Doors opened automatically. The three of them stepped in. “The entire practice in underground to preserve sterility and security.”

As they descended, they saw floors of labs, operating theaters, clinics, rehab, and patient rooms. Ten stories down, the elevator stopped, letting

them out at a thickly carpeted corridor. Classic paintings decorated the walls. They stopped by a numbered room; the woman tapped her implant, and the door opened on a luxury suite.

“Your accommodations. A technician will be by shortly to collect a bone marrow sample, Mr. Laurent. I’ll let you settle in. We’ll unpack your bags shortly. Check your closets then. Ciao for now.”

“Please lie on your stomach, Mr. Laurent. This will only take a minute. You’ll feel a pinch.”

Claude dreaded the bone marrow biopsy. He already reviewed the technique online. Needles, drills, and a grunting tech suctioning white goo, while the patient squirmed. His terror, only worsened, when the tech rolled in an instrument that looked like a drill press.

“The pinch is the local anesthetic, Mr. Laurent.”

Claude winced in preparation, but it was a hot spray aimed at his back that became instantly cool, then numb. The tech handed Liselle a set of purple tinted goggles saying, “You’ll need them.” Then he donned a pair himself. A moment later, there was a fireworks display, and then a twenty-five ml glass tube filled with bone marrow.

The tech disappeared through the suite door, taking the ‘drill press’ with him a moment later.

“You okay?” Liselle asked.

“Never better.” The high-tech anesthetic was already wearing off and there was no residual tenderness.

A knock at the door, and a silver-service supper rolled in. The waiters lifted domes off serving platters and filled dinner plates with confit de

canard, long leaf spinach, and spiced yams. The wine already decanted was a vintage Beaujolais. Not your usual pre-op meal.

“While you eat, we will provide a holo-vid of the procedure. It should not spoil your appetite. In what language would you prefer to watch it?”

“French,” they said together.

“At the end you can sign consent, virtually.”

*Welcome to Retool Transplants. We have collected your bone marrow cells and will retool them into induced pluripotent stem cells (iPS). Or what you think of as stem cells. Using CRISPR cas9 technology, we insert transcription factors (Oct-4, Sox2, c-Myc, KLF4, and nanog) into them to enable the transition.*

*We then select the targeted embryological sequences you require. We replicate these cells and select introns to differentiate them into the organ you need. Your replacement limbs or organs come from your DNA.*

*How can we transplant your new ReTool within days? We literally print them using 3D printer technology. Your DNA acts as the template, and by adding assembled proteins, adipose, and other tissues, we construct and print it in an environment so sterile, the machine must detect the site for transplant before even we can access the printer contents.*

*Your heart, Mr. Laurent, is already beating. While it is only a collection of cells, within a few days, you will be ready for surgery. Therefore, we will start your pre-op regimen immediately. Your surgeon is Ren Kato, the great grandson of Tomoaki Kato, who first successfully transplanted multiple organs into human subjects.*

*I know you will have questions and Xiaoping will stop by to answer them. While this presentation is highly technical, we have simplified it so you can appreciate what is happening while you wait. Besides the procedure, you will receive all needed therapies. What you won't need when you leave are any medications. Please sign your consent now. Merci beaucoup.*

The video displayed all the areas of ReTool Transplants, including the surgical theater, labs, and therapy levels. What was paramount in their mind was why the procedure was illegal. Everything seemed so legitimate.

When Xiaoping entered, she answered the question without prompting. “No animal testing. No government approval. There were early failures, and many transplant deaths occurred. Please believe we are long past those tragic days. Now, the procedure is so expensive it is not available to Chinese citizens, including those of the Party. It is why we only advertise on the Black Web. It requires a level of expertise in cybernetics only the one-percenters with skills can access.”

After answering a series of additional questions, both common and rare from the Laurent's, Xiaoping met their expectations, and showed them Claude's agenda for their stay. It was intensive, and Liselle played an integral part. If anything, her activities were even more intense than Claude's. Xiaoping then left them to get over their jet lag.

The virtual bay window lit up beside their emperor-sized bed, allowing them programmable landscapes to view. Though the suite was large,



the window helped them not feel claustrophobic. Claude sat down and poured himself a cognac. An overhead announcement interrupted his sips. “Enjoy, Mr. Laurent, this will be your last alcohol while you are here. Post procedure, you’ll feel so good, you may not want another drink for the rest of your life.”

“Unlikely,” he muttered, as Liselle clapped him on the shoulder.

His face, pale from poor circulation, unnerved her. They had decided on the procedure in the nick of time. His deterioration was rapid, and she wondered if she would ever see him play tennis, go deep sea fishing, or even dance again. She’d be happy with one of those, or even just playing catch with Natches.

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Three days later, Dr. Kato informed the Laurents’ that the new heart was ready, and the procedure would begin in the morning. Claude conducted business while he waited in his hospital suite, and during that time, he earned sufficient funds to pay for the surgery, although it was not his intention. Meanwhile, Liselle was busy, despite all her hand wringing.

In the morning, an attractive Chinese nurse placed an IV line and did Claude’s skin prep before transporters transferred him to a gurney. They rolled him through a back hallway. To this point, his surgical experience was as he predicted. Then everything changed.

They pushed him into an airlock; the door sealed behind him with positive pressure. Tongs on a frame emerged from the wall and embraced

his body, then the gurney dropped through the floor, and the room sealed. He then was “sterilized” using several sprays, additional shaving, all followed by ultrasonic and ultraviolet light treatments.

As he was rolled into the surgical theater, Claude was surprised by the lack of personnel. Four surgical robots closed in on him positioning themselves around him. Claude could see Dr. Kato outside the room on the other side of the glass. Laurent stared apprehensively at a heart, his new heart, suspended in a plexiglass column, floating in a transparent solution, already beating and pumping blood.

The tongs that suspended him lowered him onto the bed, which was painfully cold. Almost immediately, a robot approached and administered a sedative. The tension eased from his body and his concerns floated away. His body temperature was lowered into the hypothermic range.

“We will perform the entire procedure at high speed,” Dr. Kato said through an overhead speaker. “Perhaps you noticed the lack of bypass equipment.” Claude hadn’t. “Once your chest is opened, we will remove your old heart and transplant your new heart within six minutes while you are under general anesthesia. I will be with you throughout the surgery.”

Claude wasn’t sure how the transplant surgeon could *be* with him while outside the room. But he no longer cared, as they added a second sedative to his IV. Claude felt the endotracheal tube pass through his vocal cords, then nothing more.

While he slept, a scanner passed over his chest, identifying tissue layers and the sternum beneath. A precision laser cut between the cells rather than through them. Layer by layer, down through the bone, the incision deepened. Clamps gently retracted and opened his thoracic cavity.

The new heart rolled into position above his chest, then the robots clamped all the major vessels to both the old heart and the transplant at the same locations. Ramping up power, the robots removed the old heart at a speed that was hard for the eye to follow. They implanted the new one, which seemed small compared to the old heart, but far healthier.

All the vessels were re-approximated, and tissue glue made from Claude's serum applied to the cut edges. It was a molecular glue, stronger than the surrounding tissue, containing a matrix and endodermal growth factors to allow new cells to migrate into and grow in place of the glue. It would dissolve and reabsorb over six weeks.

When the robots removed the clamps, his circulation recommenced with his new heart. It took longer to explain than the actual surgery. Dr. Kato checked the patient's parameters.

He carefully assessed pulmonary pressure, ejection fraction, tissue oxygenation, and other variables. Satisfied, he ordered the robots to close. They used the same tissue glue instead of sutures.

When the machines pulled back, the seam in Claude's chest was barely visible. The bots titrated off the anesthesia and removed his endotracheal tube. While warming him, transporters transferred him back to his suite. Dr. Kato followed the

patient, along with a recovery room nurse who would observe Claude. Dr. Kato would patiently answer Liselle's questions while they waited for Claude's first words.

For the first time in years, Claude's cheeks were flush and healthy. While he recovered, they took tissue samples from the old heart, which they stored in the lab. Like the wooden model cast made from the client's foot for a custom made shoe, they stored his DNA for his next transplant, when needed.

"So, when can we leave?" Liselle asked.

"After about two weeks of cardiac rehab. It is much shorter than traditional rehab post transplant because the tissue trauma is far less. It is more about adjusting than strengthening. The body needs time to catch up with the new heart."

"Will he be on any medication at discharge?"

Kato looked over his medication list through his augmented reality glasses, smiled, and said, "No."

"Nothing?"

"He won't need any of these anymore."

"No anti-rejection meds?"

"It is his own retooled heart. There's nothing *to* reject."

After a pause, Liselle asked, "How can all this be illegal? It is so far ahead of anything we have seen."

"Most of this is experimental. It isn't approved and it's unlikely to get approval in our lifetime."

"But why?"

"It would dismantle an entire dysfunctional industry. Billions of dollars and thousands of jobs would be lost. UNOS would be gone. Not to mention

the illegal organ trade. There is too much at stake. Too much invested to see the technology and medicine we are practicing here to be adopted.”

“How can *that* be right?”

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“Best million euros I ever spent,” Claude said, as he signed the non-disclosure agreement. He wanted to tell all his friends about this transplant program, but the Laurents were sworn to secrecy. They’d have to find out about the program on their own.

“They’d need someone like my son to take them below the Dark Net into the Black Web. I’m going to have to buy that kid a new car once we get back to Paris. If he and his friends haven’t destroyed the house.”

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Basking in the afterglow of the first sex they’d had in a while, Liselle grinned at her husband. Biting into her croissant, she looked at the back page of the morning newspaper he was reading. There was a small article about an illegal transplant clinic raided by the Chinese government. She gasped when she read they had killed a Dr. Kato during the raid.

### **About the Author**

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