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Second Skin

by

Andrew Kass

To grasp what I am about to say, you need to accept that I walked in believing Lior Fleischmann was a genius, and that the problems in his project could be fixed.

I'm a fixer: Give me a program that is floundering, over-budget, missing deadlines, and I'll quietly move in, listen, watch, and in short order give you a plan to get it on track or shut it down. It's what I do, and lots of rare air universities know I'm good at it.

In fact, I had worked with Dr. Fleischmann some years back at P---- Institute. A well-respected professor of applied physics had described and patented an essentially limitless nanocomputer, but given \$50 million in startup seed money and some of the best minds in the hemisphere, he got lost in minutae. Lior Fleischmann was part of the solution then, pulling focus to the experimental lab by specifying, nurturing, demanding and delivering measurable results for each reporting cycle. He was credited with saving the program with my streamlined accounting, tracking and reporting protocols. I didn't mind. My job was to clear the noise so the big brains could do what big brains do.

When M----- University called me in and dropped Fleischmann's name, I thought they had an untidy but workable situation. I thought I'd have a head start with Fleischmann, having worked with him before.

You be the judge.

*

College campuses don't do moats and barbed wire, but top tier research universities do security and are usually pretty slick about it. M----- University's Materials and Media Lab is a case in point: a 12-storey glass and steel tower draws attention from every corner of the brick and oak tree campus, but there are no entrances offered to the outside.

Visitors first enter the Physics Building and check in for clearance and badging. You're then escorted to a monitored Lexan tube, where you check in again and are escorted across the tube and up to a specific lab. Check-in here involves putting all keys, tools and electronics into a locked and numbered box and stepping into a scanner that could serve up 3D dental x-rays. There's another tube connecting Level 5, top floor of the Physics Building, for staff only.

Fleischmann's lab was on the 8th Floor. Fairer to say, Fleischman's Lab *was* the 8th Floor. The elevator door opened to a bored young woman sitting at a classroom chair, the kind with a rudder-shaped writing surface on the right-hand side. She looked up from a paperback collection of Richard Feynmann stories.

"Hey, Herb."

"Hey, Veronica."

"This is our visitor?"

Her protruding brown eyes flicked to me. I heard quotes in her scratchy inflection of that last word.

“Amaral. Nick.”

I offered a hand that she left hanging, taking instead my credentials from Herb, who said:

“He’s all yours, darlin’.”

She pulled a grin and waved a ripple of fingers as he withdrew to the elevator. Then she put my pass in her book, closed it and stood, about to my shoulder level.

“You’re floor security?” I asked.

“I’m your liaison,” she replied. “We don’t need security.”

“Herb’s that good?”

She wrinkled her nose.

“Here’s our security.”

She tossed the book at the hallway to her left. It reached the edge of the bare white hall and fell suddenly.

“Pick it up, Mr. Amaral.”

I approached cautiously: No prickling sensation of electricity. I stooped to pluck up *Surely You’re Joking, Mr. Feynmann*. I couldn’t. I could not so much as turn a page.

Veronica slid up next to me and tapped a transponder on her watchband. She lifted the book easily.

“Welcome to Second Skin.”

*

I had mentioned the word ‘untidy’ in approaching this project, but the physical clutter of discarded objects was largely absent. I guessed it was all piled behind the many closed doors.

The open doors revealed neat piles, files, racks – order. I commented to Veronica.

“When Lior wants something, he wants it *now*.”

That sounded familiar on the one hand, and maybe too familiar on the other.

On to the smell of the place, one of my keys. No tang of body odor and old food, no ghosts of old specimens, snacks or gear. Disinfectant, parsonage-clean.

“Dr. Fleischmann has always run a clean shop.”

Finally, I’ve surprised her a little.

“You know him?”

“Yes.”

I left it there to let her speculate. She bit down on her questions and said, “Just around here.”

I took in the expansive southeast view from the corner office windows. His pattern: start early with maximum light, don’t be distracted by sunset. Scattered lounge chairs, a couch to the right under a big, tight Mondrian print. Look left: set back a little ways from the entry was a boomerang-shaped steel desk, and from behind it, the coldly appraising smile of Dr. Lior Fleischmann.

“Thank you, Veronica. Please close the door as you go.”

He looked as pale and trim as I recalled, linear, almost flat, the bristly hair above the grey eyes losing color to match. His green-sleeved arms remained on the arms of his chair. His eyes gestured me to a proximate armchair.

“So, Amaral, it appears I have a problem, unless you’ve come to reminisce.”

Said evenly, quietly, but with a distinct edge.

“I only look back to take lessons, Doctor—“

“Lior. I cannot abide titles, even earned. So what problem have you come to study?”

“I don’t know that there is a problem yet.”

“But given your fee structure, we may hypothesize, yes? Let me see...” He steepled short, blunt, manicured hands. “I am not producing? – No, I have delivered samples of Second Skin for clinical testing on a progressive basis. I am not reporting? – But of course I am, like clockwork. I am over budget? – I have accounted for every penny, as perhaps you have already seen. I am maybe a little too generous with my graduate students?... That’s not it. So, Amaral, why are you here?”

I let my gaze stray around the room before locking back on him.

“To figure out why I’m here.”

“Oh? Isn’t that a bit unusual?”

“It is. But they didn’t tell me. Scout’s honor.”

He sat back and frowned.

“You’re quite right. It doesn’t matter.” The lines smoothed out to his little smile again.

“So, how long should it take you to figure it out?”

“A week. Two at the most.”

Fleischmann stood and offered his hand across the desk.

“Welcome to the team.”

His grip was ice cold.

*

Fleischmann was right: if you’d overlaid his delivery reports with the milestones on the project project plan and held them up to the light, they would look like a single document. The accounting was detailed down to chewing gum and Friday night pizza. He rewarded his grad students, but just a nice bicycle’s worth.

I didn't expect to find anything in the records, and didn't. They had been prepared to be reviewed. No one could be that unfailingly, perfectly neat unless that, too, was part of the project plan.

I next turned to the report binders. They were available on a thumb drive as well, but I like studying paper, and it wasn't like any of this could be taken outside the building anyhow. Call me a Luddite, but somehow words in print wait for me in a more restful way.

Starting at the beginning:

The Group has been formed to develop a practical application for Dr. Fleischmann's experiments in intelligent nanostructures. In particular, the Group will investigate the feasibility of intelligent fabrics to be utilized in clinical settings.

I moved through several months of advances, setbacks and restated hypotheses until, about eight months in:

The Group may today state upon firm proofs successful development of a first clinically-eligible iteration of a sublimate dermal fabric known internally as Second Skin. Samples are herewith delivered for applied testing in cases of burns and deep lacerations.

As the testing proceeded, the scope pushed on to augmenting and replacing bone tissues, cartilage, muscles, blood vessels, even organs, with updated samples being supplied every two or three months. The project was just approaching its second anniversary.

I was as impressed as I was meant to be.

The moment broke with a soft knock at the office door. The door opened to reveal a spare, olive-skinned man in pine green coveralls. He regarded me momentarily with sad eyes over a thick salt-and-pepper moustache.

“Good evening, sirrr. I will take the trrrash?”

I blinked and stretched, glanced at my watch. 9:40. No other way to tell in this inside room.

“Of course. Please.”

The man moved smoothly to the side of the desk and plucked up the top layer plastic bag from the bin. His scalp shone through a thin furze of short black hair. His coverall bore the yellow script name *Kos*. There was a Sharpie sticking out of his breast pocket. He pulled a little smile, nodded, and withdrew. As he moved for the door I saw his left hand go to the breast pocket, uncap, mark the bag, and return to the pocket as the bag went into the bin.

“Uh, Kos?” I called after.

He stood bolt upright, looked back over his shoulder.

“Nick Amaral. I’m new here. Just you and me left on deck?”

The little moustache smile.

“Doctorr Verrronica is in herrr office.”

“Thank you. Good night, Kos.”

“Good night, sirrr.”

One more report. Might as well knock it off.

It was dated as of the end of the previous month. There was the usual preamble about the nature and scope of the project, an updated Gantt chart showing tasks completed to date, and a summary of current content.

The Group has produced updated samples which we believe address every point raised thus far in the initial clinical trials. The research has led us to the

inescapable conclusion that there is much greater scope for exploration and application in this vein than was originally contemplated in the project plan.

“You still here?”

I jumped at Veronica’s tired drawl.

“Apparently.”

She leaned against the frame.

“I’m fine with doing my all-nighters,” she replied. “Not so much with doing yours.”

“Well, here’s a puzzle to while away the hours: why is your janitor marking the trash bag he pulled from this office?”

Her eyebrows rose a little.

“Kos did that?”

“Yes’m.”

“Any of the other offices?”

“Don’t know. I was reading, as I will be for maybe,” riffle, “another half-hour.”

She tottered into motion toward the hall.

“Half-hour?”

“Bank on it.”

She left the door open, but I didn’t care at this point, skimming ahead past the clinical analysis method boilerplate to changes, which were written in deep Bio-speak, and on to Fleischmann’s pitch.

The intelligent nanosubstrate here called Second Skin has already been shown in verified lab results to be suitable for use in repairing, and even substituting for, every biological construct into which it has been introduced. The

ramifications of this development objectively demand to be addressed. The means to effectively address spinal cord injury, heart disease, and even corporeal catastrophe, is within the grasp of this project.

I sat back to digest that bit. This was why I was called in, for sure, the only sure thing in this place.

*

I have a method, a procedure if you will. I follow the paper trail, figure out what it's saying, what it's not saying, if it exists at all. That wasn't a problem here: I'd seen all the official paper on day one. There was food for thought, but I wasn't feeling any improprieties. So far, I saw an ambitious scientist on a hot project, pitching for an extension.

Then there's the human factor: talk to people, casually. Observe, quietly. That gives substance to the report-speak.

That night, Veronica swung back after exactly a half hour to walk me out. She seemed a bit livelier than her last check-in. I asked if I could make up for the late night.

"Drink?"

She shook her head at the elevator doors.

"School night."

As the doors opened downstairs at the tube, she tossed a glance with, "Besides, it's not all *that* late."

"Your call," I smiled. "The offer stands. Your time is valuable. This is interesting work."

"You have no idea." She checked her stride, moved on. "Maybe tomorrow."

I made a bid to walk her back to wherever she needed to go, but she was off from the checkpoint with a waved *Goodnight, Amaralnick* while I was stuck gathering my impedimenta from Herb's night man. I checked the handheld before I pocketed it. 79 new messages. A day in the life.

Before I pushed off, I asked the night man, a stocky, balding middle-aged guy who had to have been military police in a past life, what time Dr. Fleischmann usually checked in.

"Couldn't tell you," he replied.

"Oh? Restricted?"

He sized me up.

"Probably not. But he doesn't enter here."

"Staff entrance?"

I pointed up. He shook his bullet head and pointed down.

"Honchos use the sub-way entrance. It's more private."

*

When I arrived the next morning at 7:00 a.m., the lobster shift guard was on duty. He grumbled about having to call for backup to escort me, but called in and learned that the project group would send someone down.

Part of me was disappointed that it wasn't Veronica. Still, another contact: an older post-doc guy styling wavy brown hair and a goatee. He, like Veronica, stood at about my shoulder height. His name was Archie.

"Glad to meet you, Mr. Amaral. Lior has told us a lot about you."

"Has he?"

Archie hit the elevator button, still on a morning caffeine buzz from the insulated green jug in his hand.

“Oh, yes. He told us about the project you’d worked on together, where he first engaged on the concepts that led to Second Skin. Said you were the best project manager he’d ever seen.”

“That smacks of flattery. Who’s doing the donkey work here?”

“We have sub-group managers who all report to Lior. Veronica, whom you met, assists him in compiling and reviewing everything. But it’s really Lior’s show.”

The elevator doors opened. The classroom chair was there in the vestibule, empty. Archie tapped a code on his wristband.

“It’s pretty unusual for everyone to be on a first name basis with the project head, at least for public consumption.”

“Lior Fleischmann is pretty unusual,” Archie grinned, all the way to his pale blue eyes. “And this is without question a career-maker, for all of us.”

“I read up on it yesterday. Interesting work.”

Archie paused before Lior’s corner, dropping his voice.

“Running rovers around Mars was interesting work. This is....”

He shook his head, still grinning.

“So, Amaral, do you feel sufficiently briefed?” Fleischmann asked after Archie dropped me off.

“Well, I have the background. Looks like you’ve really got your teeth into something here.”

He actually laughed softly.

“You could certainly say that. You think that’s what set out the alarm?”

“Probably. People who want grants or funding are generally pretty frank about it, but your pitch in that last report was, let’s say, a little more than frank.”

“But what do you think of the project so far?”

“On paper? You’ve aced it. It’s almost too good.”

He sat back, gazing off at the overcast morning.

“And yet it’s all true.” His eyes fix back on me. “And this research is absolutely going where I said it is going.”

I whistled. Fleischmann leaned in.

“Tell me, Amaral-- Nick: If you were in full charge of this project, this team, these results so far, would you allow the plug to be pulled, simply because we had gone far enough to satisfy the plan?”

I too leaned forward.

“I guess that’s the next thing I need to find out, Lior.”

*

Archie was picked by Fleischmann to show me around. If he was annoyed at being pulled away from work, he gave no indication. Still fortified with his massive thermal flask, he punched a code into a 5-button lock to show off the lab.

I’ve seen plenty of labs, and this looked pretty standard: a transitional cube with a manager’s desk bracketed by computer screens, an assistant’s desk with only two, and a suit-up area to the right. A Lexan window ran around the cube, starting about waist high to about the top of my head. On the other side, masked people in Kevlar lab suits tooled about with various gear. A closet-sized UV air lock led between the two.

“The lab enclosure is negative pressure, of course, with a captive microfiltered atmosphere, so nothing is inadvertently released.”

“Take me through the process.”

“Well, lab team checks in with Betty,” Archie gestured, and the plump blonde at the manager’s desk nodded up pleasantly. “She has the role and goal info for today, and tracks every process entered by every lab tech. Becca here types up initial notes. They both monitor and verify changes orders on the day’s plan, and check out the shift.”

“Two shifts?”

“Yes, but short: five, maybe six hours each most days. It’s very fine work. This keeps everyone fresh, and facilitates debriefing and prep time.”

That was kind of new. Most labs want to stay lean and busy.

“Tell me what’s going on now.”

“Sure. Today we’re working on a stable construct that can be easily packaged for retail distribution.” Archie paused for a pull at his caffeine well. “Think about a ‘band-aid’ you could put on a cut, or a scrape, or even a burn, that not only protects it, but merges into exactly the correct material and DNA sequence to heal and become part of the body.”

“Sounds phenomenal. What’s involved?”

“Well, you see that person taking plates from the autoclave? – That’s the bonding surface. The UV cleans the biomatter from the crew, but we also need to make sure that no previous material remains in the media that could throw off the result.”

“Has that ever happened?”

Archie took a pull on his mug, eyes on Betty, who didn’t turn from her monitors.

“Yes, early on, when we didn’t fully grasp the properties of the material.”

“That wasn’t in the reports.”

Archie shrugged.

“That’s lab stuff. We don’t report when someone sits on a glue-covered chair, either.”

“Does that happen?”

His blue eyes lit up.

“Oh, yes. Anyway, the gal over there is examining samples from the growing cultures in those flat shelves to her right.”

“So these are biomechanical?”

“Exactly! – And then some. Because we’re programming the DNA on the fly using embedded nanocomputers, one per cell, powered by the cellular mitochondria. The nanocomputers have affinity for each other, and pass instructions and adaptations across a fabric of such cells. Reg over there is entering encoded instructional parameters to the fabric, which then gestates in the incubator in the corner under constant supervision until the desired parameters are set into the product.”

I smiled at him, wishing I had brought some coffee.

“Sounds simple the way you tell it.”

Archie laughed.

“It’s absolutely not, but that’ll give you an idea of how far we’ve come.”

“One more thing before you show me where you tank up on coffee: have any of these nano critters ever gotten out in the wild?”

“Mm, no. We suction all lab suits in the interlock. Then they go into the hazmat bin.”

“But if they did?”

He shook his head.

“Not an issue. They don’t last long out here in their unstable state. A combination of too much information in general, and not enough in particular.”

“Theoretically, how long?”

He stared at Betty’s screens thoughtfully.

“Well, no individual unstructured cell I know of has lasted more than a half hour. That was a test specimen affixed in medium.”

His blue eyes swept up with a look I couldn’t quite place; not unfriendly, perhaps a little teasing. But first things first.

“Okay, enough. Where d’you keep your coffee?”

*

The lab dominated fully half the floor inside the hallway. The common room took up most of the other half, along with bathrooms and a couple of closets and offices, including mine. The outer ring of offices held people (some napping behind closed doors) and meeting rooms, but not a whole lot of interest. The common room was something else.

It felt low and close. A little tang of garlic sour hops and body odor inhabited a low-lit room with orchid walls and plum-colored couches and chairs on a darker carpet. Beyond dim spotlights, illumination came from under cabinets in the far corner from the entry, featuring a slate counter and backsplash bookended by a refrigerator and a microwave oven.

I felt rather than saw Archie’s grin.

“This is where we come to chill.”

Veronica peeked up from chilling on a couch in a dark near corner.

“Oh, hi. Hey, Archie, wear him out yet?”

“Nah. He’s tough.”

Veronica groaned her way upright.

“Cooping?” I suggested. “Does Lior know?”

She walked up slowly.

“Everyone coops when they need to, Amaralnick. Resting here is easier because you can think of something and get right on it.”

“Change orders?”

She seemed to look at Archie before saying, “Yah, like that.”

I looked around.

“This where you hold the pizza party?”

“Every Friday night,” Archie said.

“You should come,” Veronica added. “The pizza sucks, but the beer is cold. You can get to know everybody.”

*

I went back to the hotel early and called the school president. I summarized what I had seen and asked his concerns. His chair creaked across campus as he hesitated.

“I don’t want to color your investigation, of course,” he said finally.

“Investigation?”

“Audit, then. Your audit.”

“From an auditing standpoint, this is a case study for a six sigma team. Mr. President, why am I here?”

The chair spoke for a while, as this man who controlled a nine-figure endowment searched for words.

“The tenor ... of Dr. Fleischmann’s research – and his writing about it – raises flags.”

“How so?”

I quietly uncapped a tiny Johnny Walker Black from the room’s honor bar while creaking my own swivel chair.

“It—it’s like this: I’ve seen researchers get lost in their work. We all have. But that’s not the case here. Fleischmann is on target, absolutely.”

“And that makes you nervous?”

I had time to pour the whiskey over ice before he said “Yes.”

I sighed a fragrant burn and waited for him to elaborate. Eventually, he did:

“I think it’s the subject matter of his research that has me spooked. And not just me: his peer review council in the department. The patent and applied science people love it, of course. They figure he’s printing money up there. I’m”

Another sip at his worried chair.

“I’m concerned about what else he might be printing. Intelligent fabrics. Nanocomputer-programmed DNA. He said himself the possibilities are limitless. I need to ... closely examine that assessment.”

“This morning,” I said, “he asked me point blank if I would shut down a project that had accomplished as much as his.”

“And you said?”

“I put him off, but I’ll tell you, no way. By my admittedly limited understanding, he has pushed microbiology years ahead.”

The receiver was quiet for a moment; I wondered if he’d hung up.

“He has done that.” A deep sigh. “All I need is some assurance that there’s nothing coming out of that 8th floor lab I’m going to regret. Talk with the team. Talk with Fleischmann;

he respects you. If you can point out a danger, and a way to take it out of play, he'll listen. And the University will be extremely grateful.”

*

Over the next days, I sat down with everyone involved with the project, a procession of undergrads, grad students and post-docs of all shapes and sizes but uniform in their assessment of the value of their work, their excitement at being part of it, and the honor of associating with Lior Fleischmann. I had the same feeling as when comparing monthly reports to the project scope: hold them up to the light together, it's a single report.

I stayed late on Thursday, charting my interview notes in the temporary inside office Veronica had assigned. Every data point aligned for every response on every subject. Not a post-doc ego war in sight.

Knock knock.

Kos followed his moustache in to collect my trash. Still a Sharpie in his breast pocket. He noted that I had no trash, pulled a nodding moustache smile and left without a word, the door ajar.

Annoyed, I looked at my watch: 9:45. It wasn't like I'd be disturbed at this point, and there were no secrets on my notepad or lab laptop.

A shadow flitted across the gap.

I went to the door and looked out at the hall: empty both ways to the turning. I went to the right, in the direction of the shadow. I heard something soft and heavy fall around the corner. I ran – and stopped suddenly, just before the corner. Something unseen held me, as when I'd tried to retrieve Veronica's book.

I backed off, and whirled at soft footsteps behind me. Veronica, a question in her eyebrows.

“Someone ran by. After Kos. I heard something fall – I ran, and got hung up here.”

She probed ahead, and walked around the corner without resistance. I followed.

Kos’s bin sat by itself halfway down the back hall, near the entrance to the lab. Veronica pulled a couple of random bags from the bin. Each bore a room number.

The lab door opened. Kos emerged with trash from Betty and Becca’s desks. He paused, regarding Veronica with sad eyes. She met his gaze.

“Kos, why are you marking the trash bags?”

“I am sometimes checked, Doctorrr. So I verrify the rrrooms I have collected.”

Veronica released the bags and stepped back.

“Thank you, Kos. Good night.”

“Good night, Doctorrr.”

He pushed off. She turned back to me, and shrugged.

“I’m finishing up,” I said. “Drink?”

She closed her eyes and smiled.

“Maybe one.”

We chatted about nothing across the rolling campus: the campus itself, the weather and how it was usually bad enough most of the year to encourage people to stay and work.

I asked Veronica where she was from.

“Here.”

“This area?”

“Here,” she repeated from the depths of a coat that looked like a potholder. “This is where my career starts, here, now. Where are you from?”

My raincoat felt thin all of a sudden.

“Out west. Doesn’t matter. I’m never there.”

We wound up at a tatty pub just off campus, at the head of a neon noise gauntlet a block or so long. She asked for a draft beer. I got a Black on the rocks. We clicked glasses at a small counter against the back wall, away from the hoops on TV and the modulated rock mix. She sipped, and waited, studying me. I took a pull of cold blended scotch, and took the plunge.

“Look, I’m curious about, y’know, what I’m doing here. I’m a financial guy, a management guy. It doesn’t take a consultant to see that everything’s ship-shape on that score. So why would someone blow the whistle on your project?”

An appraising sip.

“Honestly? It’s Lior.”

“How so?”

“His peers – his wannabe peers – don’t understand him, don’t like him, don’t trust him. He does things differently, gets results, and does not suffer fools. There’s a mood that whatever funding he gets is being pulled from their piffle, not seeing that our success is making it better for everybody.”

Her heavy eyes never left me. Her voice was pitched to the level of the music, just enough for me to hear and no one else.

“What about the subject matter of your – Lior’s – research, then? Any reason for concern there?”

“Well, for one thing, we don’t want it stolen.” She crunched a handful of wasabi peas, took another slug of beer. “Other than that, our biggest problem is to keep the fabric dormant but active until it can be applied. It’s never gonna run off and commandeer a missile silo or a zombie army.”

She finished her beer and set the glass down decisively.

“Thanks for the beer,” she said, fastening her coat.

“Thanks for the company,” I replied, finishing my scotch.

“When you first asked, I was afraid you wanted to sleep with me.”

“If I did, what would be my chances?”

Veronica smiled.

“It’ll cost you more than a beer to find out.”

*

Friday I got in a little late. My call with the president went on a bit. The gist was, yes, Fleischmann was deeply resented by the tenured faculty, and Dr. Veronica Hobbes should really be running her own lab.

“The most brilliant scientist this school has ever produced,” were his exact words.

“Without Fleischmann, we would never have been able to keep her.”

“What’s her specialty?”

“She holds doctorates in microbiology and physics, with a masters in chemical engineering which she completed at 16. The shorter list would be what she doesn’t do.”

We discussed Veronica for a while, leaving out my offhand proposition. We were about to hang up when I mentioned the bit about Kos, the numbered bags, and things that went bump in the night. He said he’d get back to me on Kos.

And he did, just before I entered the Physics Building from a frosty gale.

“I don’t know what this means, Nick, but Fleischmann’s group handles its own trash. There is no Kos or anyone like him in Facilities Management.”

I was still pondering that one when Archie came to fetch me. He too seemed a bit preoccupied.

“Cheer up,” I offered, “it’s Friday.”

His grin was contained by his goatee.

“Oh, Veronica pulled the team in early on a change order. We’re just about to be briefed.”

I joined the briefing in a seminar room just off the elevator. I expected to see Lior up by the whiteboard, but it was Veronica, who obviously had not slept. She wore the same clothes she’d left in and black-framed tinted glasses in the sun-soaked corner room.

“While we were all sleeping, Lior had a breakthrough which he believes will substantially resolve the media’s integrity and portability issues. Today we are driving to fabricate a new prototype of Second Skin through the introduction of this amino acid” – she pointed to a red-circled set of symbols on a busy whiteboard that might as well have been Hebrew for me – “to generate stronger covalent bonds and thus improve structural coherence and robustness. We’ll need to retest all the interfacing, of course, but... I think we got it, folks. The lid’s off.”

Applause. Hugs all around. Veronica mimed a little curtsy. And then everyone buzzed out and the room was clear. I looked to Archie, who was edging toward the door.

“Milestone?”

“You could say that,” he beamed. “Gotta go get my team ready, check the handoff status....”

And then Archie was gone, leaving the green thermal flask behind.

Veronica sagged into a seat.

“I’m glad you were here for this. It’ll explain everything.”

I approached her slowly, still trying to make sense of the whiteboard.

“You didn’t sleep at all last night, did you?”

“Hardly. When Lior called I came right back.”

“I’m surprised he didn’t do the briefing.”

She blinked up bloodshot eyes.

“He’s sacked out. I’ll hang on for the shift handoff and maybe catch a few winks myself. So,” she pushed off toward the hallway door, “hang loose. All will be revealed at the pizza party.”

I recalled my one loose thread.

“Oh, Veronica? The porter, Kos – he’s not university personnel.”

She stopped at the doorway, didn’t turn.

“No. He’s ours. We run our own thing.”

“So what was he up to with marking the bags—“

She turned with a look I couldn’t read.

“All will be revealed at the pizza party.”

*

I felt duty-bound to stick around during this momentous day, but it was deadly boring. Everyone was busy, Fleischmann’s door was locked, and I was firmly asked by Betty to leave

the lab when I poked my head in. My glance through the window was not revealing, save it might have been a little more crowded than usual in there.

I went back to my office to check the accounts for notes on cleaning or maintenance, but only turned up a vague blob of regular expense for “Infrastructure and services”. I then went out and took a long lunch at the Student Life food court, and bought a green university cap at the College Shop before returning. Some time passed before an undergrad lab rat I recalled as Juhaid came to retrieve me, saying my name to the guard and wasting no other words in the transit. Great things happening, and he had to go fetch a nosey outsider in a ballcap.

I went right to the common room, where the early shift was already changing the mood. No pizza yet, but everyone had a beer. I crossed the happily gabbing crew to find out if it was as cold as advertised, catching bits of conversation on the way.

“...think we really got it locked in this time.”

“Enough for WalMart?”

“The FDA already has it under...”

“...could maybe take Proto 7 for field testing.”

“Possible. We’d need permission—“

“Lior will get permission.”

The fridge was full of brown bottles, all cold. I found a comfortable chair in the shadow near the fridge and made myself invisible.

First shift was already losing coherence by the time Archie led in a whooping and hollering second shift. He darted straight for the fridge and started tossing beers over his shoulder. Not one hit the floor. He turned and grinned at gangly Juhaid, the last in.

“You old enough? Reformed enough?”

The kid knew his catechism.

“Just gimme the damn beer, Boss.”

I sidled up to Archie.

“Congratulations.”

We clinked bottles. He chugged his. I finished mine. He wiped his mouth and goatee with a sleeve and pulled two more.

“Must feel good.”

He grinned.

“Trust me, there are no words.”

“It’s a new freakin’ day,” Juhaid added, buzzed and friendly now.

“It’s a new day / New Day,” echoed through the lounge with a clinking of bottles.

Gradually the energy ebbed, the talk and talkers subsided, and the room went mellow.

It wasn’t long before Betty and Becca entered, each with a short stack of pizza boxes. This roused a cheer as they set the pizza down on a coffee table and the counter.

Then Lior and Veronica walked in to a standing ovation. The room drew to them like they were a specific gravity. Lior raised his hands:

“Friends! Friends, through your efforts we have redefined the possibilities of medical science, perhaps of life itself. But this is not a time for speeches. It is a time to relax, and celebrate in the most extraordinary company most of us will ever know.”

His soft, rusty voice stopped, and the thrall was broken. Cheers, embraces around Lior.

I kept my eyes on Veronica, at his side, crowded out, away, accepting a beer from Archie, dropping onto the couch behind the coffee table. I made my way over to her.

She reclined as though poured out on the flat couch. People were starting to tear into the pizza before her, the stack raised on some kind of pedestal. I sniffed, and decided Veronica was right: cheap sauce, greasy cheese, flat dough, bad pizza. It didn't matter: two boxes were empty by the time I sat down next to her. I held up my beer bottle as she raised an eyelid.

“Success?”

She clicked bottles wearily and took a slug.

“Thanks.”

“Is it ... what you hoped for?”

Another slug, peering at me. She lay back.

“I'll let you know.”

Suddenly Lior was standing over us, his face in shadow.

“Big day,” I toasted. “Congratulations.”

“Big day,” he repeated. “God, you just don't know.”

“Why don't you tell him, Lior?” Veronica said sharply. “It goes out tomorrow anyway, right?”

“I was thinking about that, to be honest—“

Veronica kicked the pedestal from under the pizza boxes, which landed flat on the table. The pedestal hit the floor and stuck.

“Show! Do! Don't tell,” she snapped. “I've learned, Lior. We all have. It's time.”

Fleischmann did not say a word. The whole room went still as he stared at the object on the floor. Then, stiffly, he bent to pick it up.

“Consider paper,” he said, regarding the cardboard tube in his hand as though it were a diamond in light. “For hundreds of years, humankind has taken the smallest identifiable particles

of the time, pulped wood, silk threads, and mechanically joined them to create a different material that could be used in quite different ways. That was where we started.”

With a snap of his wrist, the tube opened to a sizeable sheet of paper, which he engaged in a series of complicated folds, barely glancing down as he continued.

“The materials we have now are much smaller and more sophisticated. And so too our means of manipulation. Thus we can conceive of fabrics that offer new properties.”

He held up an origami crane.

“These new properties can be encoded to expand on the original design.”

He looked at Archie, who tapped at his wrist band. The folded crane grew in Fleischmann’s hands to a full-sized crane with fully-articulated wings.

I joined in the murmurs of approval with my own amazement, until the bird’s head turned so its eyes were on me. I was struck dumb, immobilized.

Fleischmann waved at the table, and hands cleared it. He snapped out the crane so it resembled a long, narrow sack, and laid it flat upon the table before me.

“We have learned so much, some... some, to our sorrow.” He was talking directly to me now, as though dictating to my bared consciousness. “One night, early in production sampling, there was a short in the incubator. Only I was there, and fortunately, I smelled burning. There was no time to observe protocol: I cut the circuit, entered the lab and extinguished the fire.

“That would have been all right, but....”

He closed his eyes, head tilted up, and went on.

“While removing the incubator samples and waiting to assure that the filtration system was coping with the smoke, and removing the incubator samples, I had an idea. Taking careful

notes, I applied a sample of the fabric to an annoying cold sore in my mouth. It should have become part of my oral material. But it adopted the virus code, and ... became what I am now.”

He caressed the material on the table.

“I nearly died that morning, after I went home. The material throughout my body grew unstable after an hour, critical after two. Veronica rescued me, never mind how.”

“I smuggled material to you in an injectable saline solution.”

“Yes,” he sighed. “There are no words to thank you.... That was when the focus of the project shifted. And that is how, today, I will be able once more to walk free in this world.”

He brought the bag up to his lips and blew, long and slow, until his head was just over the table and the ballooning bag upon it. He leaned back.

The bag on the table was changing, shaping a head, a torso, arms, legs, a green coverall, a moustache—

“Kos!” I blurted.

The fabric became flesh, the bulging eyes opened at me and it said, “Yes, sirrrr?”

I finished my beer with shaking hands, tasting electric, wrong.

“Proto 7,” Fleischmann said reverently. “We learned so much from your brothers. You whom we have crafted may sojourn briefly. But I, who am flesh, am reborn.”

The last words came with a kind of whoosh, as the room started to spin. Something in the beer. Veronica’s face loomed before me.

“So now you know, Amaralnick.”

With a kiss, I was gone.

*

When I woke up on the couch, the room, the lab, the floor, all empty. They’d cleared out.

I stumbled down to Security at about 4:00 a.m. – at least they didn't leave the shields up. The guard knew nothing about them leaving, but handed over my cell phone. I called the president, and he called you.

That's all I've got. I don't know where they went, but I'm guessing that had been worked out in advance. I can tell you that at least some of them won't like where they wind up and will surface, one way or the other.

I'm done. Whatever else is your call.

* END *