## I [Todd] Boot Sequence

Todd's grandfather said he remembers sitting in front of a black and white TV, watching two men landing on the moon. His dad can tell you exactly what he was doing when the World Trade Centre was destroyed. There's a moment, when the world changes, that crystalizes in your brain. It's like you can go back into that moment and smell the coffee you were making, feel the carpet on your bare knees as you sit way too close to the TV, remember the dumb joke you made when your friend texted you to find out if you'd seen the news yet.

Todd had a moment like that when he watched the last keynote address from WWDC last year. It might seem ludicrous to compare events that changed everything for everyone to a cooperate event to hype up Apple's latest product line. For Todd though, that moment is set in amber for him. He can walk around in it. He can feel the way his earbuds rubbed in his ears. He can see the finger-worn trackpad on his laptop and the faded letters in on its keyboard laptop. He can smell the lingering odor of the chicken tikka he'd had for lunch earlier.

Everybody knows what they announced that day. The iLace was supposed to change everyone's lives. For most people, it was handy. Convenient. A cool toy. For Todd, it was the start of a whole new world. Having a network of swarm-based cellular robots embed themselves into your nervous system would have been a dystopian nightmare of his father's generation. For Todd's generation, it was an easier way to keep track of appointments or play the latest AR game. Todd knew right away this was the start of something big. He always felt like computers, and later phones were a transitional technology – the horseless carriage to the mustang convertible – but he never knew what was going to be next. This felt like it, the thing that would upend the world.

The cellular machines had been around for a few years as medical technology – "medcels" – and most people had a basic version in their bodies that could do things like monitor and send data to their doctors and administer treatments. What Apple had done with the iLace was to bring the whole thing into the commercial sector.

Of course, Apple being Apple, they locked it down straight away. The technology can latch on to the optic nerve and modulate what the brain receives in any way, but all it was being used for was a heads up display. One can create and send messages with one's mind, but it has to go through Apple's servers and get turned into text and back again. One literally have the entirety of human knowledge in their head, but the most they can do with it is crib something to a 'read-it-later' file.

To be fair, Apple has the FBI and the NSA looking over their shoulder, judges and lawmakers who would just love to get some newspaper time making new laws, and a real up-hill battle convincing the average Joe to fork out a thousand bucks (get it down to $399 with a data contract) to give them direct access to their brains.

Todd had his computer loaded up at 11:59 on preorder day. He fully expected their servers to buckle under the weight but he managed to have his order in by 12:02. The next three weeks were the longest Todd ever remembered. They were longer than the last week of grade 10 before going to the cottage for a month with his girlfriend. They were longer than the weeks before Christmas when he was seven. Finally, the day came. He tracked the package on his phone – refreshing the site every 5 minutes or so despite the fact that he had set up text and email notifications. It was out for delivery! When he got home from work it would surely be there.

When he got back to his building, there was a small white box waiting for him. He raced up to his apartment, tearing at the wrapping in the elevator. Inside, there was a stylishly designed white box with rounded corners and a clear plastic cover. Inside, artfully presented, were two pills, one white and one black. The black pill was a kill switch. It was there as a safeguard. If he swallowed the black pill, the iLace would go offline immediately and then dismantle itself over the course of the next couple days (expect fun times in the bathroom). The white pill was the startup set for the iLace. It contained about a billion cellular computers that were capable of wireless communication. They would use the process of metabolism to reproduce and propagate through your system and construct the neural lace in situ. The activation process was supposed to take about a day or so. The instructions said that eating foods rich in minerals such as nuts or fish would speed the process along, so he had brought home a package of almonds.

So Todd sat in his apartment, eating almonds washing them down with milk.

Todd imagined he could feel the little cellular machines constructing their webs acDàwèi his nervous system, latching into his medcel networks, forging new pathways. He knew, rationally, that there was no way he could feel anything other than he had had too many almonds and milk made him gassy. In retrospect, he should have probably just watched a movie and gone to bed.

He had a hard time getting to sleep that night. Eventually, sleep claimed him and he had a fitful night. Finally, it was the morning. The alarm went off at 6:30. He opened his eyes and pressed the off button on the alarm. In the lower left corner of my peripheral vision his could see (though with perfect focus, as though he was looking straight at it) a white square with the word "Hello" in large text acDàwèi the middle. Underneath it said "look left to set up."

Within a few minutes he had configured the basics – entered his apple ID, set up email, configured his messaging and notifications. It had given the option to restore from his phone backup, but he refused. He wanted this to be a fresh experience. It took a little while to get used to entering text. He had to concentrate on the console window and basically think each word in a very specific way. There was some autocorrect features but it took a small amount of discipline. "The human mind is like a drunken monkey bit by a scorpion" goes the saying. You try texting with a drunken monkey sometime and you might get the idea. The autocorrect does a reasonably good job but it does lead to some pretty comical errors if you're not paying attention.

Todd messed around with his configuration a little over breakfast. First app he installed was to stream music. You have never really heard music until you've had it routed directly into the auditory processing center of your brain. He got so swept away by one of his old playlists that he was nearly late leaving for work. Finally, he called himself a car. When the car got there he got into the front seat and again phased out a little playing with his new toy. He fired up his twitter client and DMed his buddy, Dàwèi.

@r3dt0ad: just got my new #iLace

@sk8erade: still waiting for mine. So jealous!

@r3dt0ad: gotta work so can't dig in. irc later?

@sk8erade: u bet bro! don't work 2 hard

@r3dt0ad: no chance man

The fact that Twitter opened up their format years ago to as many characters as you like hadn't really changed anything. Even now, when Todd had to think every letter and word, he still spelled out a shorthand and fit all his tweets into 140 characters. His buddy Dàwèi (aka sk8erade) was just as pumped to get his iLace, if not more so.

The car pulled up to the office building where Todd worked, he got out of the car and hit the button in his mind to give the car a 4 star rating – it'd been clean and didn't smell bad. He tumbled out to the sidewalk and quickened his step. If he could pick up his pace a little bit, he'd have time to grab a coffee on the way. He cast his eyes down to the right and found the Starbucks app and ordered himself a coffee. He was almost at a run by the time he picked it up.

Working for a game design company was not as cool as he'd hoped it would be when he was younger, but it was still pretty cool. It was however, an office job. Long gone were the days of foosball in the lobby and beanbag chairs. Games were big money these days and with big money came the need to look like you're worth big money. His boss, Dan, was a nice guy – pretty chill when it counted – but he also insisted that everyone came to work on time, and dressed professionally. Dan was the veteran of several techy startups and was always saying "Take it seriously or no one will take us seriously."

Todd rocked up to the front desk of HugeReality with 2 minutes to spare. He logged in to his terminal and opened up the project he was working on – an in-game UI for a terminal the players would encounter on the third level of the latest game they were working on. He sipped his coffee and smiled at his desk mate, Sue. Her glasses reflected some code she was working on, she only used them as a display device but secretly Todd thought she used them because she liked the way they framed her face. She smiled back and waved at him.

The office was kind of an open concept layout that they'd inherited from the last occupants. Dan had read some study a few years back that showed that the noise of open concept office plans was cause of severe stress and a major productivity suck, so he's had noise cancelling barriers installed around each desk. Todd was surrounded by about a dozen of his co-workers but was enveloped by a comforting envelope of silence.

Todd texted to Sue, '*How was your date last night?*'

Sue looked down at her phone and when she saw the text raised her eyebrows. '*How the fuck did you do that?!? Where is your phone?'*

Todd had to chuckle to himself. How could one of the best programmers he'd ever met be so out of the loop when it came to the latest tech? '*iLace! I'm texting you from my mind!*'

'*No shit!*'

'*Yes shit. So… how was the date?*'

'*The usual, it was fine until it wasn't*' Todd could see the chagrinned look on her face.

*'I know your gonna find the right person soon*.'

'*Nope, gonna be me and my cats. I just know it*'

*'Just you wait! Ms. Right is come along and swoop you off your feet!'* Todd thought

'*What if I do the swooping, eh?*'

'*That'll be the day*' Todd saw the text blinking on his display and barely stopped himself from glancing right to send it. He was going to have to watch out for that. You can't really blame autocorrect for your innermost thoughts! Sue liked to put on a tough show but she's really a pussycat. Still the 'good friend' thing to do was help her keep up the façade.

Work was just a normal day. Todd worked through a couple issues he was having with the design on the control panel for the game he was working on. The game was a period piece so it had to look like it came from the early 2000s. He'd been doing a bunch of research on system from back then, he had a period authentic desktop computer – even managed to scare up a CD-Rom of Windows XP to install on it. It had a CRT monitor and everything. Todd was inordinately proud of it, though he was sure the rest of his office thought he was a bit nuts. The machine had taken months of dealing with collectors, custom printing components and not a small amount of money. On top of all that the machine was loud and dusty. The noise cancelling barriers took care of most of the noise but when anyone came to talk to him they left wondering how anyone had ever dealt with that every day.

Todd remained steadfast. He felt that UI arose from the mechanical interaction with the machine. The clicking of the mouse and the keyboard were part of the interface. The irony that he was using smart glasses in a 3d rendered environment to model this primitive machine was not lost on him. Still, he often felt a kind of connection with how his father had lived by building this machine.

He spent a little longer than he probably should have trying to get his ILace to link up to corporate network. Ever since he first read that Apple was developing it, he'd fantasized about using the iLace as a designing tool. The reality was not so simple. The software the company used just wasn't capable of accepting input from the neural inputs and he couldn't pipe the display into his optic nerve in any kind of meaningful way. It just wasn't there yet. Todd was disappointed, but work still needed doing so he gave up and went back to modelling the scroll wheel he'd been working on.

When work was done he grabbed a six pack and something to throw into the microwave and headed home.

*Siri turn the lights on* he thought as he opened the door. **Sure Todd** he heard in his head as the lights came up gradually. He flopped down on the couch and pulled up the IRC client he'd downloaded earlier that day. IRC was a tech that had been around since Todd's dad's day and it hadn't really changed that much since then. It was an example of something simple that just worked well enough not to change. Todd always thought there was a lesson there when it came to UI design. If you need a place for people on a network to come together and send text and files to each other, there's no need to have 3d surround sound and graphics. You need a box that everyone can type in. In a few seconds he's logged in to his gaming channel.

[17:38] <redT0ad> Hey sk8erade, where you at?  
[17:38] <m1st> sup, Redt0ad! Haven't seen him on yet. Hey, you preordered an iLace, right?  
[17:38] <redt0ad> Hey m1st. Yup! Got mine yest  
[17:39] <m1st> sweet! You booted yet?  
[17:39] <redT0ad> yea man, I chattin you from my mind 0.o  
[17:39] <smaugly> T0ad, dude! You like borg now?  
[17:40] <redt0ad> v funny, smaugly. So when's your's comin?  
[17:40] <smaugly> nah man, I'm all natural.  
[17:41] <m1st> Oh, so you go rid of your ocular implants?  
[17:41] <smaugly> That's totally different, I'd have coke bottles if it weren't for those!  
[17:41] <sk8erade> Yo! Sorry I'm late guys. Just had to swallow a very expensive pill.  
[17:41] <smaugly> You too, sk8er? Just don't come crying to me when they're suckin your brain out with a straw.

Todd had to grin. There'd been all kind rumors, saying the iLace would cause Parkinson's or something resembling a prion disease. Total bunk, of course. Still, just saying it meant it was out there. Apple had published numerous studies with loads of really reputable sources. It didn't matter, Apple haters had been around for decades and no amount of convincing would change their tune.

[17:41] <redT0ad> Awesome, it came! Takes about a day, eh.  
[17:42] <sk8erade> Ya, I know. RTFM. Gonna catch a movie.  
[17:42] <redT0ad> Good plan! Catch up with you tomorrow?  
[17:42] <sk8erade> Sure! I'm off work, DM me in the morning.   
[17:43] <redT0ad> A'ight buddy, l8r  
[17:44] <smaugly> I for one, bow down to our new robot overlords.  
[17:44] <m1st> Can it, dude.

Todd was still grinning to himself when he logged off - Smaugly was such a troll.

Truth be told, Todd was a little underwhelmed with the whole thing. He'd built it up so much in his mind as something that was going to make his whole life different and honestly things were pretty much the same. The peripheral vision HUD thing was cool but really just a slight upgrade from the retinal projector his glasses. Typing with your mind was really neat – he would have killed to be able to do that in high-school – but once he got used to it he didn’t really think about it. Having sound directly in your auditory processing center was amazing, but really only a little better than a good pair of bone conducting headphones.

A few years before Todd had read about the breakthroughs with cellular machines – genetically engineered cells that were capable of running code and even communicating wirelessly both with each other and networked devices. They quickly changed the face of medicine. Cancer was eradicated pretty much overnight, most diseases could be cured within minutes. The change was remarkable. The best part is that they were pretty cheap. They basically manufactured themselves. So when Apple announced that they were going to be bringing a consumer version to market, he was on board straight away.

After all the excitement leading up to it, actually having it installed seemed a bit of a letdown.

'*hey bro, you still up*' he saw a text notification in his left peripheral. It was Dàwèi, a.k.a. sk8erade.

'*ya man, what's up?*' he texted back.

'*I'm all booted up,*' Dàwèi texted, '*this is awesome!*'

'*How the heck did you get it online so fast?!?*'

'*Mostly because I injected it into my neck, man. Skipped the digestive track.*'

'*Dude, that's crazy. I'm surprised you didn’t just go into septic shock*' Todd sent.

'*I may also have written a new install script to speed things along.*'

Dàwèi was crazy like that. Since they were kids, every time he got a new toy, it was in pieces within an hour of opening the box. How much he paid wouldn't stop him either. He wouldn't be happy until he'd taken it apart, fully understood how it worked and put it back together. It was this quality that made him a good hacker. Though he preferred the term “security researcher.”

‘*So you got root yet?*’ Todd sent, smiling to himself.

‘*Not yet*,’ Todd could practically see the chagrin on his friends face. ‘*You best believe I have all my fuzzers and rev-eng agents working on it. It’s a pretty tight ship though. Nothing’s slipped through yet.*’

‘*Gee. Software to be installed in a billion brains is actually secure. Who’d have thought.*’

‘*Sarcasm is not a good look for you man. It will get cracked. There’s no such thing as invulnerable code.*’

Todd rolled his eyes. They’d had this conversation before. Still, he thought, no need to be a jerk about it. ‘*Alright, well I need to sleep. If you need a beta tester I’ll, happy to help…tomorrow.*’