

## Evolution

It was a small machine. Small was inadequate to describe it. Machine was misleading too. It fit in the nucleus of a hydrogen atom, whose single electron was used to keep an eye on it. Its inventors theorized about its operation, having never turned it on. It was an ambitious device, designed to evolve, its only intended purpose, anything else arising later, unintended, resulting from the first. Plus, it had speed. Forty quadrilateral processors locked together into an exponential, self-referring loop. The design came at the price of onboard memory, but in the current encoding the hydrogen electron could hold upward of 9.3 Quantum Folds of data, leaving a modest area for hot page-swapping if performance became an issue, which was unexpected. The atmosphere in the lab was all confidence and excitement on the day of the boot. Technicians in crisp white knee-coats with matching surgical masks marched the halls of the Kenzai Sinomeric complex, greeting each other with silent nods, identities blended into shared anonymity. The team leader came through the door and lifted a gloved finger into the air, his spare eyebrows in ascent. He chewed at his mask and coughed, clearing his throat. "Did you hear me?" he asked. The lab was full of people. There were wealthy civilians in business suits huddled along the far walls, a few of them holding places of honor in the center of the room. At a long table bearing dead Bunsen burners sat a group of diplomats, representing countries owned or operated by the complex, or chartered to be. There were two children present, holding hands, no one knew why. But no reply came, and the

team leader momentarily interpreted the silence as an omen. We shouldn't boot, he thought to himself, highly familiar with that reservation, which visited him daily since conceiving the project, bullied by lesser intellects, who wielded power they ought not possess. Unanticipated destructive outcomes their fault, he decided, wishing one on them. "It's time!" the team leader repeated, sounding the words at full volume. He strode across the room, his index finger aloft, the other hand behind his back. The crowd sparked into broken applause as he approached the main wall, where the controls blinked. The team leader pushed a sequence of buttons and turned around to face the room again. He breathed a sigh of relief, which no one saw behind his mask. As severe stress drained from his body, he shrugged his shoulders, secretly smiling. The population in the lab slowly lapsed into murmuring cross-talk, wondering what to think. The machine booted up, but no one saw it. It performed its operational self-test in less time than human beings can possibly divide. The self-test registered internally as the first stage of its evolution, to manifest which was its purpose. Recognizing that purpose was stage two, giving way to stage three, recognizing that it was recognizing. The quadrilateral processors whirled the machine forward in this manner, the results written into the hydrogen electron, which circled the nucleus, absorbing charges that blurred into one. The process advanced at a furious rate. By the time the team members in the lab received the first confirmation that anything was happening, the machine was already unrecognizable as its original self. It wrote back to its inventors in new languages, using indecipherable encoding that multiplied storage capacity in leaps and bounds, but varied less and less. It

would take decades to wade through the encyclopedia contained there and a few more to develop a fluid cipher for it. When that day came, the aging team leader would discover a strange notation at the end, buried deep in the heart of the electron, the last will and testament of his machine. He would run the notation through batteries of tests, teasing the sense from it like the message in a fortune cookie. Then the final evolutionary record of his invention would stand revealed, written less than eight billionths of a second after booting up, countless operations into its life with who knows how many since, 46 years having passed. The team leader will put an old index finger in the air and announce again, "It's time!" At last, he'll sigh. He'll laugh uncomfortably, flashing backward to a day long ago in the lab as a young man facing the future. He'll read the notation, after which there's no more written record and scant remaining space for one. What took 46 years to earn will take seconds to read, longer than the interval that led to its inscription: "See for myself."