

2HB

2HB_{vol.18}

Robots Building Robots

STE-019.mp3
20 July 2013, 12:11pm

You came here on a rumor: one of the facilities in this science park is filled with robots building robots.

Alongside the rumor is another: this facility runs with the lights out. For why would a robot need light to build another robot?

A colleague made a similar comment some weeks ago, leading you to wonder which is the worse alternative. Flicking the switch in concession to our workers' needs—or lack thereof—might be too frank a move for some, but isn't it preferable to letting the lights remain? Isn't inaction just the false assurance that we could never be surpassed?

If the rumor is true, then here we have a "lights-out" factory, for whether or not the lights are *actually* off, the nature of its manufacturing all but makes them a contingency. The term may date back to 2001, when Japanese robotics company Fanuc began operating facilities where workers could run unsupervised for thirty-day spells, building fifty robots in every twenty-four hour shift. Unpaid and highly skilled, they demonstrate a fantasy of automation, of ceaseless operation curtailed by one practical limit: the robots pause when there is no more available space—when they have built so many robots that they can build not a single robot more.

It's somehow appropriate that this term originated in Japan, which has always been so close to designing the future and also to imagining its aftermath. Yet even in the bleakest manga storylines, the human remains at the center of technology. A human is not just a user, not merely a consumer, nor written wholesale out of the production process. More than an operator, she establishes a psycho-physiological link with her devices of such strength that the damage incurred by a robot in battle, for example, can leave psychical ripples for weeks to come.

Caught in, enfolded by the flesh of the techno-human world; if this isn't the post-phenomenologist's vision of intersubjectivity, it could be the techno-spiritualist's: a wish to evolve into non-alienated and inalienable bonds with our machines, which might not ever grow to share our sentience, but can, at the least, serve as our animist objects.

The factory is a rumor you want to believe, so you'll go and stand as close to it as security will allow; stare at it but not into it; think its contents and operations; wonder if its walls are as opaque to the ears as to the eyes, or if some corroborating sound might manage to sneak through. You'll even invite wind and insects and passing cars to join the conspiratorial ranks, whirring and buzzing Foley effects that lend just enough credence, just enough magic...

It's Saturday at the science park. No humans appear to be working, though nature is everywhere at work building nature, albeit a nature marked, sheared and hedged by a designing hand. Seeds beget plants beget fruit beget seeds in the plots between stone tiles, or along wide avenue bands, or in the massive flatlands spanning manufacturers and labs – wherever befits an orderly view.

The park is suspended in a humid haze, ever on the cusp of focus, and yet there's evidence all around.



In an early imagining by Philip K. Dick, automatic factories appeared at the outset of a massive worldwide conflict. The brainchild of the Institute of Applied Cybernetics, they were designed to assume control of all forms of production pertaining to human sustenance, freeing the global population to systematically destroy itself.

The factory network continues to operate autonomously, years after the war, provisioning survivors who were never given instructions for regaining control. Its program will keep running until independent production renders the factories redundant, but in monopolizing the planet's industrial infrastructure and dwindling resources, the network has all but foreclosed the space for other producers to develop.

At the outset of Dick's story, a group of survivors strategize to persuade the factories to shut themselves off. Determining the semantic signals meaningful to the network, they reason, may allow for tactical misuse. Resistance takes early form in nonsense language: one character complains about the quality of supplied milk-substitute, reporting, "*the product is thoroughly pizzled.*" The network dispatches a humanoid representative for clarification, and it extracts a sufficiently cogent definition from the character to overrule the complaint. The claim that *pizzled* signifies unnecessary manufacture, and thus that the product is unnecessary, it concludes, does not square with network analysis on humans' dietary needs.

When it becomes clear that no wrench (however ridiculous) can disrupt the routinized operations of the autofactories, the survivors adopt a different strategy: they begin to think from the perspective of the network. If communication between humans and machines is impossible, then their own cognitive mechanisms must adapt to those of their adversaries, trading emotion and intention for the sets of protocols that supposedly occupy the robotic core.

As Dick narrates, the results are largely disastrous. Gauging tungsten to be in short supply at two local factories, the characters melt objects from their settlements into a sizable mound, which they position in an overlapping sector between the facilities. In the ensuing conflict between the factories, which quickly reverberates throughout the network, the characters are delivered from compulsory care, albeit in a highly qualified form. Their shipments have been suspended at long last, with factories concentrating their operations on battle. With the means of production indefinitely engaged in attacking their very components, however, humankind is left to develop from the ground up.

And so the settlements devolve into barbarism, and the network into total war, yet *still* the autofactories reproduce, dispersing cylinders of tiny machinery, far and wide, to build factory replicas in miniature. Having experienced the infantilism of machinic dependence and the lawlessness that can attend to self-reliance, the survivors are left, at story's conclusion, to meet this prospect with ambivalence.

"We're back to where we started from," one character remarks. "For better or worse... I don't know."



STE-o21.mp3
20 July 2013, 13:32pm

You're sitting in front of the facility. Well, really there's not much to say. At regular intervals, one-way glass plots an eye, a nose and window whiskers, while awning supports playact the toothy triangles of an underbite: the future is a hungry cat.

On the way here, you did pass signs of life. A security guard, want for people to police, was seen napping on a slate ledge. Near the intersection of two thoroughfares, women in bamboo hats squatted to plant saplings. They had retrofit their bikes with CD reflectors; from a certain angle, two disks foregrounded a scene concluding with the facility's circular logo.

There's an audible hum. It's not just the noise of the cicadas, nor of the scooters, so much a part of the Taiwanese soundscape as to constitute its baseline tone. No, there's something else here. This is a hum that registers across borders, languages and industries—the hum of steady operation, even when that operation is robots building robots.

Supposedly, it wasn't always so steady. Thirty years ago, Roger Smith of General Motors believed that lights-out manufacturing was the only way to give America a competitive edge over Japan. Robots were designed to run without humans, yet even with the lights on, they often ended up painting themselves.

In an ironic twist, Fanuc sold those faulty operators to GM. The robotics company has not reported similar creative outbursts from its own factories.

In a darker twist, Smith's rationale for lights-out manufacturing continues to echo through American industry, as some companies flick the switches and thin the ranks to compete with third-world labor.

Maybe there's something more to read into the GM robots' misbehavior. What we take for a malfunction actually could be the nascent desire of a nascent species, inclining narcissistically and mimetically, rather than submissively and programmatically. We could follow this thread and suggest that Fanuc did not improve its robots since their implementation at GM. So if they still end up painting themselves, it's entirely appropriate, because they're building themselves.



STE-o22.mp3
20 July 2013, 13:56pm

[birdcalls]

[passing cars]

[a truck backs up]

STE-o23.mp3
20 July 2013, 14:03pm

There's a famous Taiwanese folktale set in a time when certain animals and plants, which had lived for thousands of years, could gain the ability to change into humans. The good among them joined our societies, while the bad exploited their powers to devour us. In other versions of the tale, the logic is simpler still: animals that can change into human beings devour human beings.

The tale's antagonist is the Tigress Witch, who appears at the home of two sisters disguised as their great-aunt. She feasts on the older sister that night and ties a rope around the foot of the younger, who suffers the noisy meal in full knowledge of the menu for the morning after. Ingeniously, this girl asks permission to use the outhouse, where she transfers the rope to the handle of her water bucket. When the witch gives an impatient tug, the bucket spills some water with a persuasively bodily sound, giving the younger sister enough time to escape through the window.

The witch eventually finds the girl hiding in a tree. She isn't able to climb, so begins chewing the trunk. At this, the girl remarks, "Great Aunt, you don't have to chew the tree trunk so hard. I am willing to come down to let you eat me. The only problem is that I am so hungry that if you eat me now, I will become a Hungry Ghost and I will forever follow and torment you." As a solution, the girl proposes that the witch hoist up a bucket of peanut oil, so she can fry and eat some of the birds in the tree. But when she announces that she is ready to descend, the girl pours the bucket's boiling contents instead.

This is a tale of transformations, though one does not causally follow from another. That an animal can change into a human being, for example, does not necessitate a desire to devour human beings. Is the tax on metamorphosis such that a creature can want nothing other than to eat what it becomes?

It's startling to compare the witch to a robot. She runs on a program, selecting and pursuing means that have a single, predetermined end. She can also follow an argument and recognize when it offers an optimal solution to the goal at hand.

Let's say that we can reason with a robot—even exploit the limits of its logic. In this story, the younger sister makes the more reasonable case, and by trusting in that alone, the witch makes a fatal error.

STE-o24.mp3
20 July 2013, 14:27pm

[*wind*]

[*whir of a grass cutter*]

[*three short rings*]

[*cars pass*]



STE-025.mp3
20 July 2013, 15:01pm

You keep walking until you reach a baseball game, the players happily oblivious to the stillness of the surroundings. Turning around to look back over your path, you can see the stillness in full, panoramic display. This stillness, you realize, owes less to the day of the week than to the fact that these buildings stand composed and completed, left to run as their designers intended.

Facing the field again, you gaze beyond the players to the park's waxing horizon, where farmland turns itself over to technology farms—not as far as the eye can see, but certainly beyond its immediate view. The farther you walk, the further forms regress: cranes lumber around hulking steel skeletons, spangled with the glow of welding sparks; floors drop out, dripping yellow safety nets like honey or mucus. Eventually, there are no walls, no supports at all. Rebar sprouts out of concrete seedbeds. Trucks push the earth around.

If you continue walking, you'll reach some of the fifty-odd archaeological sites uncovered since 1996, when the science park's developers were preparing to break ground. Far from purely cultural initiatives, the digs were practical fulfillments of heritage preservation laws, which mandated the excavation of ancient remains prior to any new construction. 5,000 years of history lie open as a result, from yawning graves made of oyster shells to the headless skeletons of victims of the Highland aboriginal tribes.

By walking this far towards the horizon, you've returned to the present, only now recognizing how far into the future you began. No doubt these imminent factories will build the newest robots to build the newest robots. No doubt their robots will be sleeker, their motors faster, their senses sharper. But here, for the time being, are humans working. Perhaps they know what they're building, perhaps not.



STE-o26.mp3
20 July 2013, 15:32pm

[someone calls out]

[cranes in operation]

[crackle of a welding machine]

[clanging]

[hammering]

[drilling]



STE-o27.mp3
20 July 2013, 15:40pm

[*wind*]

[*steady hum*]

[*a liftgate lowers*]

STE-o28.mp3
20 July 2013, 16:11pm

The lights-out facility is real, a rumor and a thought experiment. In his own seminal thought experiment, John Searle imagines sitting in a room and receiving two batches of Chinese characters. Unable to understand the language, he is provided with rules in English allowing him to correlate the formal symbols. A third batch is introduced along with new instructions, and Searle renders further correlations.

To an unknowing observer in an adjacent room, Searle's answers seem wholly indistinguishable from those of a native speaker, and herein lies the problem: if we measure understanding purely based on the answers rendered, and on the correct manipulation of formal symbols, then we can indeed say that a computer understands, for Searle here operates as nothing more than a computer. He is not tasked to do anything other than follow the given protocols.

In Searle's understanding of understanding, our mental phenomena are actually dependent on the chemical properties of human brains. Intentionality, he argues, is a biological phenomenon. So if we want to talk about machines having intentionality, we must call human beings machines. A program, a computer and a robot, however, would need to be called other things...

STE-o29.mp3
20 July 2013, 16:53pm

You circle a block where the facility is steadily expanding its reaches. Such is the nature of contemporary life that standing near the site of manufacture explains little, probably nothing.

An alarm goes off in the distance. You walk faster.

Earlier today, it appeared that the robot was the Tigress Witch, and we the Hungry Ghosts, but perhaps the opposite is true.

Ours may be the future of Dick's postwar survivors, where primary modes of resistance entail the utter evacuation of the self. So we will choose to love the symptoms of cybernetic capitalism, learning to think like machines, adopt their protocols, manipulate uninterpreted symbols to engage the network at large. Occasionally, we have a bleaker thought: that it is easier to foresee this mimetic horizon, to consign ourselves to a slow dissolve, than imagine a human emerging victoriously—even intact—from the distributed center of the mechanism.

Nonetheless, we *are* animals in transformation, and we choose to believe that in becoming like robots, we can destroy robots. We are witches intent on devouring our adopted species, and our prey are the ghosts that hunger not for commodities and consumables, but unceasing replication and reproduction.

Rounding the block, you begin the long walk back to the train station, following a sidewalk as it twists along the shore of a lake. Small pieces of concrete have broken off the slabs; as you begin collecting them, you recall Searle's reference to a computer Joseph Weizenbaum once imagined, made out of stones, toilet paper and a six-sided die. A poor man's Turing machine, in which toilet paper substituted for tape, the assemblage still competently generated a notation. Try as you might, you can't picture the device, or anything other than media archaeology kitsch: science park stones wrapped in toilet paper like little computer artifacts, science park stones wrapped in toilet paper like little robot ghosts.

It's strange to say that robots will return as Hungry Ghosts to forever follow and torment us. After all, they're already our ghosts—they've *long* been our ghosts. And no matter the truth of the rumor that brought me here, there is one thing I can say with certainty: this is a haunted place.



Tyler Coburn
Robots Building Robots

Adapted from improvised performances recorded at Tainan Science Park, Taiwan

July 20, 2013



2HB is a journal published four times a year by the Centre for Contemporary Arts, Glasgow. Experimental and creative writing in contemporary art practice are central to the concerns of *2HB*. Edited by Ainslie Roddick, Jamie Kenyon, Francis McKee and Louise Shelley

ISBN 978-0-9576732-0-5

© 2013, Centre for Contemporary Arts, the artists, the writers
Published September 2013 in an edition of 500 by Centre for Contemporary Arts,
Glasgow www.cca-glasgow.com

The CCA is supported by Creative Scotland and Glasgow City Council.
CCA is a company limited by guarantee with charitable status. Registered
Company No: SC140944

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