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# Talking Head

By LAWRENCE DOWNES

## HOW TO BUILD AN ANDROID

### The True Story of Philip K. Dick's Robotic Resurrection

By David F. Dufty

Illustrated. 272 pp.

Henry Holt & Company. \$26.

“How to Build an Android” is the honest title of an earnest book, the first by David F. Dufty, a senior research officer at the Australian Bureau of Statistics. It explains how a team of researchers at the University of Memphis collaborated in 2005 with an artist and robotics expert, David Hanson, to create what was then the most sophisticated android anywhere, a replica of the science-fiction writer Philip K. Dick.

They called him Phil.

If you have heard of him, you probably know that he is missing, or at least his head is. It disappeared in December 2005, when Hanson was flying from Dallas to San Francisco to show Phil off to Google. Hanson changed planes in Las Vegas, but left Phil’s head in a carry-on bag in the overhead bin. He didn’t realize what he had done until he got to San Francisco. The bag continued on to Orange County, and has never been recovered.

Where did Phil go? To many people the disappearance sounded like something out of Philip K. Dick, whose lurid, drug-enriched work inspired Hollywood’s dark science-fiction thrillers “Blade Runner,” “Total Recall” and more. He wrote a lot about artificial intelligence, impenetrable conspiracies and androids going missing. And he had lived in Orange County until his death in 1982. Did Phil decide to go there on his own? Was he stolen, or did he escape? What had he been thinking?

Dufty admits right away that nobody knows. He goes searching anyway, visiting the warehouse in Scottsboro, Ala., where the

nation's unclaimed baggage goes to die. He wanders among the miles of abandoned toiletries, electronics, T-shirts and toys: Nope, no Phil.

This is the point where a storyteller might be lured toward the paranoid or paranormal. But all Dufty wants to do is tell what he says is the all-true back story: Who was Phil, and how did he come to be?

Dufty was a postdoctoral fellow then at the Institute for Intelligent Systems at the University of Memphis, where he worked closely with the scientists building Phil. His reconstruction through interviews with the participants is an appealing depiction of brilliant minds dreaming big on shoestring budgets — particularly Hanson, a skilled sculptor whose company, Hanson Robotics, had been pushing the frontiers of android making for years, and Andrew Olney, a programmer whose job was to give Phil the spark of artificial intelligence: the ability to recognize and convincingly respond to human speech.

Phil had Dick's face, sculptured from photographs using a spongy, skinlike polymer called Frubber. With motors and cables as his facial muscles, his mouth moved when he talked. He made faces, and met a visitor's gaze. He had Dick's own clothing, provided by the author's family. The clothes hung on an inanimate mannequin; this android was advanced but not *that* advanced. The sum total of Phil's animate presence was in his head.

For he had Dick's brain, or at least the closest that Olney and his collaborators could assemble using the best early-21st-century technology — software that combed through an immense database of Dick's own words as expressed during his lifetime in books and interviews, and shaped it into speech.

It wasn't perfect — even a writer as well known and talkative as Dick did not leave enough recorded traces of himself to allow an android imitator to even begin approaching the vast totality of a human mind. Phil could spit out an accurate Dick answer to a specific question if it found a match. If it didn't, Olney's solution was to program Phil to improvise, to spin related words into phrases

in a way that (he hoped) sounded coherent.

Phil was also given canned responses to predicted exchanges, like this:

Q. What are you?

A. I am Phil, a male Philip K. Dick android electronic brain, a robotic portrait of Philip K. Dick, a computer machine.

The sum of these parts — that was Phil. He was a dazzling blend of technology and art. He was also erratic, as you might expect any first-generation android to be. Unexpected questions and loud noises threw him off. Androids have a hard time responding to human speech cues, knowing when to answer and when to stop. Sometimes Phil would get into a self-perpetuating conversational loop. His handlers — who monitored his responses on a computer screen — had to keep a close eye.

Once someone asked Phil what he thought of “Blade Runner.” He started talking about commercializing literature and merchandising rights. Then he kept talking, and talking, as Hanson watched the dialogue monitor with alarm: “There seemed to be a large amount of output waiting in the buffer, and it was growing larger every second.” Phil wasn’t going to shut up. Hanson cut off Phil’s mike, so he seemed to stop, though his lips kept moving and the words kept (silently) flowing.

Dufty provides an exhaustive understanding of how to build an android, but seems to have missed some of the memos on how to build a book. His prose has the curiously flat quality of computer-generated speech, and his flights of insight and imagery are too often earthbound. He has a lot of technical ground to cover, but his narrative tends to unfold with the dread linearity of PowerPoint slides.

This technical-manual approach sometimes slows the drama, but Dufty finds it where he can. He is hip to campus office politics and the way egos rub together, and the suspenseful anxiety of grant applications. When a Chicago Tribune reporter writes about Phil’s celebrated appearance at a technology expo and mentions Hanson

Robotics but not the whole Memphis team, the hurt feelings are worth a couple of tense pages.

But the character who ends up being most intriguing is poor nonhuman Phil, whose unknown destiny gives the book a tinge of sorrow. Tied as he is to the life and words of a deeply troubled and testy namesake, he can be churlish at times, giving snotty answers to simple questions. A Wall Street Journal writer said of Phil, "The most advanced robot on exhibition was also, in my view, the most obnoxious."

That's hardly surprising. But one mystery is why Phil's creators never gave him an answer to a question you would expect anyone to ask Philip K. Dick. It's the title of the story that inspired "Blade Runner": "Do androids dream of electric sheep?"

As Dufty explains, no one ever thought of it. When the question inevitably arrived, Phil's unscripted reply began:

"Yeah, exactly. But I couldn't explain that feeling. I just couldn't give an explanation of it. But um, well, I remember one dream I had. In the dream Tess and I were in the kitchen on a high stool, we'd found a cereal box and on the back of the cereal box is extremely valuable information directed at us, and we were both reading it. And the relationship between that and 'Ubik' is an obvious one."

Poor Phil. He was a little nutty, but he was A.I.'s pioneer. Hanson has since built a more advanced version, minus the programming. Huge corporations are using their computing power and money to make big gains in artificial intelligence. Apple has devised a "personal assistant" for the iPhone, Siri, that gives eerily conversational answers to plain-speech questions. She's very good, and supposedly will get better.

But this is how Siri handles the question:

Q. Do androids dream of electric sheep?

A. I found three livestock services a little ways from you.

I like to think Phil could do better, given another chance.

*Lawrence Downes is an editorial writer for The Times.*