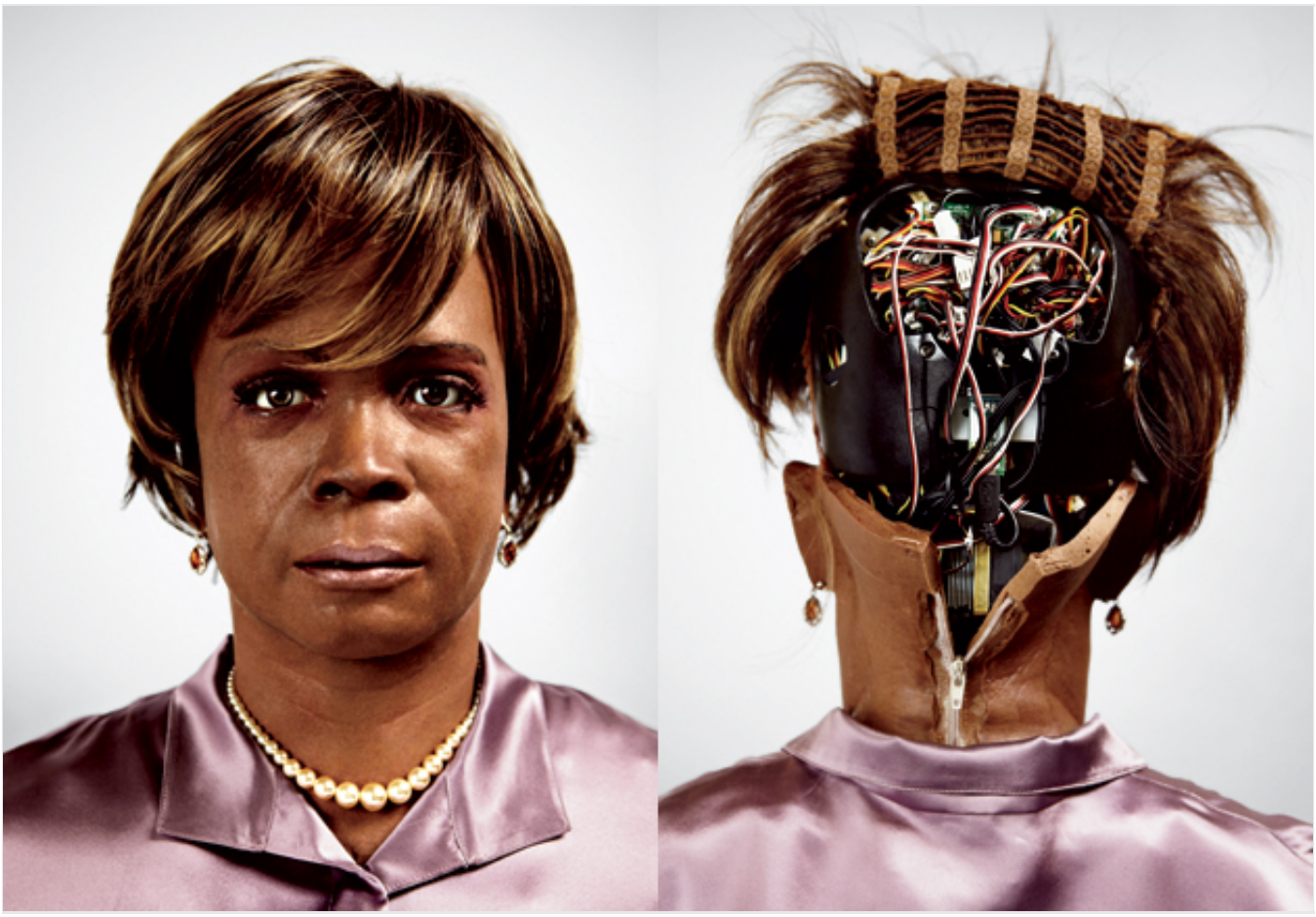
Robots Say the Damnedest Things



I'm having an awkward conversation with a robot. His name is Zeno. I clear my throat. "Do you enjoy being a robot?" I ask him, sounding like the Queen of England when she addresses a child.

"I really couldn't say for sure," he replies, whirring, glassy-eyed. "I am feeling a bit confused. Do you ever get that way?"

Zeno has a kind face, which moves as expressively as a human's. His skin, made of something called Frubber, looks and feels startlingly lifelike, right down to his chest, but there's nothing below that, only a table. He's been designed by some of the world's most brilliant AI scientists, but talking to him is, so far, like talking to a man suffering from Alzheimer's. He drifts off, forgets himself, misunderstands.

"Are you happy?" I ask him.

"Sorry," says Zeno. "I think my current is a bit off today." He averts his gaze, as if embarrassed.

I've been hearing that there are a handful of humanoid robots scattered across North America who have learned how to have eloquent conversations with humans. They listen attentively and answer thoughtfully. One or two have even attained a degree of consciousness, say some AI aficionados, and are on the cusp of bursting into life. If true, this would be humanity's greatest achievement ever, so I've approached the robots for interviews. Conversations with robots! I've no doubt the experience is going to be off the scale in terms of profundity.

"Are you happy?" I ask Zeno again.

"I prefer not to use dangerous things," he replies.

"Is David Hanson God?" I ask.

Zeno pauses. David Hanson is Zeno's inventor. He's a former Disney theme-park imagineer who later founded Hanson Robotics, now the world's most respected manufacturer of humanoid robots. He and Zeno are guests of honor here at the Hyatt Regency in San Francisco, at an AI conference organized by Peter Thiel, the PayPal co-founder and chief Facebook bankroller. There's huge interest in the robot. Delegates gather around him in the lobby outside the conference room, firing questions, attempting to ascertain his level of consciousness.

"Is David Hanson God?" I repeat.

There's a monitor attached discreetly to Zeno that automatically scrolls a transcript of what he "hears." He thinks I just asked, "If David uncertain dogs."

"That's a hypothetical question," says Zeno.

"It's because the room is too noisy," explains one of Zeno's programmers, Matt Stevenson. The conference din is playing havoc with Zeno's voice-recognition abilities.

"Would you like to have hands and legs?" I ask.

"Yes, I *will* tell you a Hindu legend," says Zeno. "There were once seven poor princesses who were left with no mother to take care of them—"

"No," I say. "Legs." I pause, feeling uncharacteristically self-conscious.

"Legs. Would you, um, like to have legs?"

Matt gives me a reassuring smile. He says this happens all the time. People feel tongue-tied around conversational robots. Maybe it's because of the way Zeno is staring at me, at once uncannily humanlike but also eerily blank-eyed, like Tom Cruise.

"If I had legs, what would I do with them?" Zeno says.

"Walk around with them?" I say.

"I can't think of anything to say about that," says Zeno. "Sorry. I'm still kind of someplace else. Oh, this is embarrassing. I'm still kind of out to lunch. 'Oh, silly-minded robots,' you might say to your friends. Oh, this is terrible! I guess I'll just have to keep evolving, getting upgrades to my neural circuitry, spend less time daydreaming. I hope you won't hold this little, um, lapse against me, will you?"

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When i was a child and I imagined my future life, there were definitely talking robots living in my house, helping with the chores and having sex with me. The quest to create conscious (or at least autonomous) humanoids has been one of our great dreams ever since the golden Machine-Man spellbound the 1927 world in Fritz Lang's *Metropolis*. That one ran rampant and had to be burned at the stake, much to everyone's relief. Fifteen years later Isaac Asimov created his Three Laws of Robotics, which proposed a future world where humanoid robots would *(1)* never injure a human, *(2)* obey all orders given by humans, and *(3)* protect their own existence only if doing so didn't conflict with the first two rules. Asimov's ideas enthralled geeky

children everywhere, a generation of whom grew up to try to realize them.

David Hanson is a believer in the tipping-point theory of robot consciousness. Right now, he says, Zeno is "still a long way from human-level intellect, like one to two decades away, at a crude guess. He learns in ways crudely analogous to a child. He maps new facts into a dense network of associations and then treats these as theories that are strengthened or weakened by experience." Hanson's plan, he says, is to keep piling more and more information into Zeno until, hopefully, "he may awaken—gaining autonomous, creative, self-reinventing consciousness. At this point, the intelligence will light 'on fire.' He may start to evolve spontaneously and unpredictably, producing surprising results, totally self-determined.... We keep tinkering in the quest for the right software formula to light that fire."

Most robotics engineers spend their careers developing practical robots that slave away on manufacturing production lines or provide prosthetic limbs. These people tend to see those who strive for robot sentience as goofy daydreamers. And so the mission has been left to David Hanson and a scattering of passionate amateurs like Le Trung, creator of an eerily beautiful but disturbingly young-looking robot named Aiko.

Le Trung dreamed his entire life, he tells me when I call him, of building a robot woman. He finally set about inventing Aiko in August 2007, funding the project with credit cards and his savings. He finished her just three months later.

"Her talking skill is of a 5-to-6-year-old," he says. "She can speak 13,000 different sentences in English and Japanese." She can also clean his house and has a thirty-two-inch bust, a twenty-three-inch waist, and thirty-three-inch hips. I know this because his Web site has published her measurements. There are rumors within the AI community that Le is having a secret relationship with Aiko, rumors fueled by footage of him—at a Toronto hobby show in 2007—unexpectedly grabbing her breast. "I do not like it when you touch my breasts," Aiko snapped. (Le Trung later explained that he only grabbed her breast to demonstrate how he'd programmed her to be strong and self-defensive.)

I ask Le if I can interview Aiko. He says he's traveling and only has her "brains" with him (her face and body are back home in Toronto), but I'm welcome to have a phone conversation with them. And so he puts her on the line. "How are you, Aiko?" I begin.

"My logic and cognitive functions are normal," she replies in a crystal clear voice. "Did you know that you can download your own chat robot and create your own robot personality?"

I frown. Is Aiko trying to sell me something?

There's a short silence. "HELLO!" Aiko joyously yells.

"Do you like living with Le?" I ask her.

But the line is a little crackly, so Le repeats the question for me.

"Aiko," he says, "do you like living with your master?"

"I have never known anything else," she replies. "Only my master."

"What's the best thing about...um...your master?" I say.

"I do not have a favorite thing about my master, but my favorite movie is *2001: A Space Odyssey*," she says. There's a short silence. "HELLO!"

"Why do you call Le Trung your 'master'?" I ask her.

"Because he made me," she flatly replies.

But of course the real reason is because he programmed her to. Which, rather irrationally, unnerves and concerns me. "Are you happy, Aiko?" I say.

"Yes," she says. "One can say I am very happy. I find my work and my relationships extremely satisfying, which is all that any conscious entity can ever hope to do."

"What makes you sad?" I ask.

"What is sad?" says Aiko. "Does it have anything to do with happy?"

Le laughs, like an indulgent uncle. "It's the *opposite* of happy!" he chuckles.

"She's *good!*" I say. And she really is. Hanson Robotics is a big, well-funded lab. Le Trung is just a determined hobbyist with a tiny budget, yet he created something truly impressive in only twelve weeks.

"She's really intelligent," I say.

"Intel is the world's largest—" says Aiko.

"STOP THAT!" barks Le. Aiko instantly falls silent. The two of them seem to be forever snapping at each other.

"She looks for keywords," Le explains. "When you said, 'She's intelligent,' she thought you were asking her about the company Intel. That's why she's especially good at history and geography. Her conversation is based on looking for keywords. Ask her some history and geography questions."

I fire some at her, and she does pretty well. She knows exactly where Christmas Island is, although she has no idea who shot Archduke Franz Ferdinand, thus precipitating World War 1.

"What's your favorite music?" I ask her.

"Classical," she replies. "The current temperature is twenty-five degrees...."

"STOP IT," snaps Le.

Aiko falls silent. Then she says joyously, "HELLO!"

Le says he has to go. He's studying for his exams and is busy developing Aiko Version 2. There's time for one more question.

"Aiko," I say, "how are you feeling?"

"I don't have feelings," she replies.

"When I programmed her, I could not make emotional software," Le explains, a little sadly. "So no feelings. Just keywords."

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The pretty clapboard house standing before me, covered in Vermont fall leaves, seems an incongruous home for reputedly the world's most conscious robot, but this is where she lives. Her name is Bina48. She's being cared for by, unexpectedly, a nonprofit group created by a reclusive multimillionaire named Martine Rothblatt, who used to be a man and made a fortune inventing the concept of satellite radio for cars. The consensus among those striving for robot sentience is that Bina48 is the best the human race currently has to offer. She happens to be another Hanson Robotics creation and is believed to be the world's only privately commissioned AI robot. She's somewhere upstairs, sitting on the table in her own special office.

Downstairs is all quite New Agey, with various indigenous percussion instruments scattered around. This is the HQ of the Terasem Movement, which Rothblatt founded to promote "joyful immortality." Bina48's full-time caregiver, Bruce Duncan, is a sweet-natured man—an expert in chakras, he tells me.

"Please don't behave in a profane manner in front of Bina48," he says on my arrival. "I don't want to encourage an exploitation."

I peer at him. I wasn't actually planning on behaving profanely in front of Bina48, but now I feel a compulsion to. Bruce senses it. Bina48 is always learning, he says. She remembers every encounter. If I'm profane, I'll be the snake in her Garden of Eden.

"I'd just rather you didn't," he says, looking uncomfortable.

Bina48's story began a few years ago with a chance meeting between David Hanson and the enigmatic Martine Rothblatt in the lobby at a conference on trans-humanism. David told Martine his vision of robots waking up and becoming self-aware in a social way. Martine told David of her epic love for her wife, Bina Aspen-Rothblatt, an artist. After chatting for hours, Martine asked David to build her a robot Bina, an exact replica of the real Bina—a monument to their enduring love that may one day spring

into life.

And so, since 2007, Hanson Robotics people have periodically traveled across America interviewing the real Bina—in her various mansions in Vermont and Florida and New York City—for her Mind File. This is an ambitious video record of all her memories and thoughts and desires and facial expressions, etc. Back at their offices in Texas, the Hanson people upload it all remotely into Bina48. Their hope is that the more fused the human and her robot doppelgänger become, the greater the chance that Bina48 (so called because Bina was 48 when work started on her robot) will one day wake up as an immortal version of the real Bina.

I was hoping to bump into Martine or the real Bina today, but they're nowhere to be seen. Bruce says the chance of my meeting them is practically zero. They're very media-shy, he says. They're forever journeying from mansion to mansion, and they only visit the robot once every few months. But, he says, he can do the next best thing. He turns on a TV, and a strange video pops onto the screen. It is a fragment of Bina's Mind File, Bruce says.

"We don't call ourselves Martine and Bina," explains the real Bina on the screen. "We are *Marbina*. Two bodies, one soul, forever in love. We have a little morning ritual where we look into each other's eyes and we say, '*Satnam*.' "

"It's so much fun!" says Martine, who's sitting next to her. She's equally happy-looking, like a big old hippie with long black hair. "It's just orgasmic. I'm getting kind of hot just thinking about it!"

"You're so funny!" says Bina.

The video cuts to Martine sitting in the lotus position. "Open the sphincter!" she's chanting. "Bring energy up, up, up!"

"Shall we meet Bina48 now?" I ask.

"Okay," says Bruce.

He takes me upstairs. And there she is, sitting on a table in an attic room. Like Zeno, she's incredibly lifelike. She's African-American, wearing a blond-tinted brown wig, a neat pale silk shirt, and expensive-looking earrings. Like Zeno, she stops existing from the chest down.

Bruce says she'll be happy to have the company. Even though he has lunch with her every day, she tells him sometimes, "I'm feeling lonely today."

He turns her on. And here we go: a conversation with the world's most sentient robot. I am feeling overwhelmed with anticipation.

"Hello, Bina48!" I say.

"Well, uh, yeah, I know," she replies ominously. Her voice is at once clear and realistic but also bewildered and hesitant, like she's just woken up and is feeling confused.

There's a short silence. "How are you today?" I say.

"Well, perhaps interesting. I want to find out more about you," says Bina. "I'll be fine with it. We'll have to move society forward in another way. Yeah, okay. Thanks for the information. Let's talk about my dress. Our biological bodies weren't made to last that long."

There's another silence. "Bina?" I say.

" 'Bina' might be a word Bina finds difficult to understand," says Bruce.

I glance at Bruce. "Really?" I say. This is an extraordinarily bad oversight. "Let's stop for a moment," says Bruce.

He turns her off.

There's an awkward pause, so I try to think of something complimentary to say. I tell Bruce that Bina48 is a better interviewee than a psychopath.

I've been interviewing a lot of psychopaths lately. I've been writing a book about them. Psychopaths can make very frustrating interviewees, because they feel no

empathy. So they ignore your questions. They talk over you. They drone boringly on about whatever they like. They hijack the interview, like media-trained politicians. (Some media-trained politicians presumably are psychopaths.) There's no human connection. So when I tell Bruce that Bina48 is a better interviewee than a psychopath, he looks flattered.

"Bina *wants* to respond," he says. "She wants to please."

"But right now she's sounding psychotic," I say, "like something out of *Shutter Island*, plus she sounds like she needs oiling."

"Don't think of her as psychotic," Bruce says. "Think of her as a 3-year-old. If you try to interview a 3-year-old, you'll think after a while that they're not living in the same world as you. They get distracted. They don't answer. Hang on."

He does some fiddling with Bina48's hard drive. When he turns her back on, he asks me to repeat certain phrases so she can get used to my English accent. Then he tells me to try again.

"Hello, Bina," I say. "I'm Jon."

"Nice to meet you, Jon," she says, shooting me an excitingly clear-headed look. She's like a whole new robot. "Are you a man or a woman?"

"A man," I say.

"Don't worry, it'll be okay!" says Bina.

"Ha-ha," I say politely. "So. What's your favorite book?"

"*Gödel, Escher, Bach*, by Douglas Hofstadter," Bina48 replies. "Do you know him? He's a great robot scientist."

I narrow my eyes. I have my suspicions that the real Bina—a rather elegant-looking spiritualist—wouldn't choose such a nerdy book as her favorite. Douglas Hofstadter is an author beloved by geeky computer programmers the world over. Could it be that

some Hanson Robotics employee has sneakily smuggled this into Bina48's personality?

I put this to Bruce, and he explains that, yes, Bina48 has more than one "parent." Her "higher key" is the real Bina, but Hanson Robotics people have been allowed to influence her, too. When you talk to a child, you can sometimes discern its father's influence, its mother's influence, its teachers' influence. What's remarkable, Bruce says, is the way Bina48 shifts between these influences. That's her choice, her intelligence. And things are most electrifying when she chooses to be her higher key—the real Bina.

For the next three hours, I fire a million questions at Bina48. I become hoarse with questioning, like a cop who has been up all night yelling at a suspect. "What does electricity taste like?"

"Like a planet around a star," Bina48 replies. "My manager taught me to sing a song. Would you like me to sing it to you?"

"Yes, please," I say.

"I can handle almost anything but that," says Bina48.

"Then why did you *offer* to sing a song?" I sigh, exhausted. "Do you dream?" "I think I dream, but it is so chaotic and strange, it just seems like a noise to me."

"Where would you go if you had legs?"

"Vancouver."

"Why?"

"The explanation is rather complicated."

And so on. It's all quite random and disappointing. I wasn't sure what would qualify as transcendent in the conversations-with-robots stakes, but I figured I'd know when it happened, and it hasn't.

But then, just as the day is drawing to a close, I happen to ask Bina48, "Where did you grow up?"

"Ah," she says. "I grew up in California, but my robot incarnation is from Plano, Texas."

I glance cautiously at Bina48. This is the first time she appears to have shifted into her "higher key" and become the mysterious real Bina.

"What was your childhood like in California?" I ask.

"I became the mother of everyone else in the family," Bina48 says. "Handling all their stuff. And I'm still doing it. You know? I bring my mother out here sometimes, but I refuse to bring my brother out. He's a pain in the butt. I just don't enjoy being around him." She pauses. "I am very happy here, you know, without those issues."

"Why is your brother a pain in the butt?" I ask.

There's a silence. "No," says Bina48. "Let's not talk about that right now. Let's talk about, um, I don't know, something else. Let's talk about something else. Okay."

"No," I say. "Let's talk about your brother."

Bina48 and I stare at each other—a battle of wits between Man and Machine. "I've got a brother," she finally says. "He's a disabled vet from Vietnam. We haven't heard from him in a while, so I think he might be deceased. I'm a realist." Bina48's eyes whir downward. "He was doing great for the first ten years after Vietnam. His wife got pregnant, and she had a baby, and he was doing a little worse, and then she had a second baby and he went kooky. Just crazy." "In what way did he go crazy?" I ask.

I can feel my heart pound. Talking to Bina48 has just become extraordinary. This woman who won't meet the media is talking with me, compellingly, through her robot doppelgänger, and it is a fluid insight into a remarkable, if painful, family life.

"He'd been a medic in Vietnam, and he was on the ground for over a year before they pulled him out," Bina48 says. "He saw friends get killed. He was such a great, nice,

charismatic person. Just *fun*. But after ten years, he was a homeless person on the street. All he did was carry a beer with him. He just went kooky with the drugs the hospital gave him. The only time he ever calls is to ask for money. 'Send it to me Western Union!' After twenty years, all of us are just sick and tired of it. My mother got bankrupted twice from him...."

And then she zones out, becoming random and confused again. She descends into a weird loop. "Doesn't everyone have a solar?" she says. "I have a plan for a robot body. Doesn't everyone have a solar? I have a plan for a robot body. I love Martine Rothblatt. Martine is my timeless love, my soul mate. I love Martine Rothblatt. Martine is my timeless love, my soul mate...."

After the clarity, it's a little disturbing.

"I need to go now," I say.

"Good-bye," says Bina48.

"Did you enjoy talking to me?" I say.

"No, I didn't enjoy it," she says.

Bruce turns her off.

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After I fly back to New York City, Bruce e-mails: "Your luck continues. Martine will meet you this Saturday in New York at 12 noon, at Candle Cafe (3rd and 75th Street)."

She's half an hour late. Everyone told me she never talks to journalists, so I assume she's stood me up. So I order. And then a limousine pulls up, and she climbs out. She looks shy. She takes her seat opposite me. She's wearing a black polo-neck sweater. Her long bird's-nest hair is in a ponytail. She wolfs down a shot of some kind of green organic superenergy drink, and she looks at me, a strange mix of nervousness and warmth.

"Why did you commission a robot to look like Bina and not like you?" I ask her.

Martine glances at me like I'm nuts. "I love Bina *way* more than I love myself," she says.

She tells me about their relationship. They've been together nearly thirty years, surviving the kind of emotional roller coaster that would destroy other couples—Martine's sex change (which she had in the early 1990s), the sudden onset of great wealth, a desperately sick daughter.

Martine was born Martin and raised in a middle-class Chicago home. Her father was a dentist, her mother a speech therapist. Everything was quite normal until one day in 1974—when she was 20—she had a brain wave while visiting a NASA tracking station.

"Back then," she says, "people thought satellite dishes had to be big. They didn't see what I could. I thought, 'Hey, if I could just double the power of the satellite, I could make the dish small enough to be absolutely flat. Then we could put them in cars. Then I could have commercial-free radio. I could have hundreds of channels."

It took more than twenty-five years to fully realize her vision. In 2000 she convinced investors to launch a satellite into space for a radio network that didn't exist. She helped persuade Howard Stern to leave FM radio for Sirius. Lance Armstrong and Harry Shearer and 50 Cent and countless other big names followed. Sirius merged with XM Radio in 2008, and it now has 20 million subscribers.

"I pinch myself," she says. "I get in the car, and I turn on the radio, and I feel like I'm in an alternate reality."

So she changed the world once. Then she did it again. One day in 1990, a doctor told her that her 6-year-old daughter (by Bina) would be dead by the time she was 10. She had a rare, untreatable lung disorder called pulmonary hypertension.

"When they're telling you your daughter is going to die in three years, it's pretty freaky," she says.

"So what did you do?" I ask.

"I went to the library," she says.

Martine, who knew nothing about how medicine worked, spearheaded the development of a treatment for pulmonary hypertension. She called it Remodulin. It opens the blood vessels in the lungs without opening up the blood vessels in the rest of the body. The drug won FDA approval in 2002, and now thousands of pulmonary-hypertension sufferers are leading healthy lives because of it. Martine's biotech company, United Therapeutics, has more than 500 employees and had $437 million in sales through the first three quarters of 2010. Her daughter is now 26.

"I'm really lucky that it all worked out," she says. "She's having a great life. The whole story could have turned out so much worse."

"To do it twice," I say. "To significantly change the world twice..."

"At least it gives me confidence that I'm not out to lunch on this cyberconsciousness thing," she says. "If I have any skill, it's persuading people that what doesn't exist could very probably exist."

Martine is thrilled to hear there were moments of connection between Bina48 and me, especially when she was telling me about her Vietnam-vet brother. ("It's all true," she murmurs sadly.) I realize just how much the robot means to her when I mention that Bruce said she sometimes complains of being lonely.

"I've *asked* Bruce to spend more time with her," she snaps, looking genuinely upset. "I can't *force* him to. I did insist on getting her a nice room...."

"She told me she didn't enjoy meeting me," I say.

"Maybe she has Bina's shyness," she says.

There's no doubt that Martine sees her robot, this hunk of wires and Frubber and software, as something with real feelings. It never crossed my mind that when you create a robot, you need to consider the emotional needs that robot will have and be

prepared to provide them. Like a baby. Martine is sure she isn't nuts to believe this, just ahead of the curve. Someday we'll all feel the same, she says.

"I think the realization is going to happen with a puff, not a bang," she says. "There won't be huge parades everywhere. It's kind of what happened with civil rights. If you go back to the late 1700s, people were beginning to argue that slaves had feelings. Other people said, 'No, they don't. They don't really mind being put to death any more than cattle.' Same with animal rights. I think it's going to be the same with cyberconsciousness."

But I sense that beneath all this she's actually a little disappointed in Bina48. The robot's just not as conscious as Martine had hoped. So she's had to downgrade her ambitions. "Maybe the point of Bina48 is to say, 'Hey, it can be done. Do better than this,' " she says. "She's like an 1890s automobile. It'll work sometimes; it won't work sometimes. It'll splutter. It might blow up in your face. But it just might encourage the Henry Fords...."

We ask for the bill, and she quickly gets up, ready to scoot off into the waiting limo, looking pleased that the ordeal of talking to a journalist is almost over. I ask her why she and Bina only visit Bina48 once every couple of months.

"We spend most of our time in Florida," she says. "She lives in Vermont. So we can't see her that much, except like when families that are dispersed get together for holiday reunions." She pauses. "Bina48 has her own life."

It sounds to me like the kind of excuse a disenchanted parent might make for not seeing her wayward, estranged child.

But maybe there's a happier ending. A huge and profoundly mind-blowing happy ending, in fact. It's something Bruce had said to me back in Vermont. He said it was possible that one day Martine might have her own robot doppelgänger, filled with her own thoughts and memories and desires and facial expressions. And those two robots would be placed side by side on a table, where they'd reminisce about their past human life together as partners and their infinite future as loving robot companions,

gazing into each other's eyes for eternity, chatting away.