

GRANDMA'S ROBOT--FACT OR FANTASY?

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It is 9:45 AM on May 14, 1998. You have just finished your hospital rounds and have arrived at your office for your 10:00 AM appointment.

Before you begin, you want to check to see how your 84-year-old mother is doing. She is at home with "George"--her new robot. You still aren't totally comfortable with the latest technological device to come to market although it is wonderful that Mother can still be at home. It is easy to recall that just 5 years ago a person with her degree of dementia would have been institutionalized--probably in a facility with a locked door for she has a tendency to wander and get lost.

You work long hours and your wife, a RN, works at the local hospital and has community interests and responsibilities as well. In the past you would have attempted to find a reliable and honest home aide to supervise Mother but this would have been next to impossible. There is no doubt that by this point, just several years ago, she would have been institutionalized. The cost of a home aide or nursing home placement would have been high and your two children would have gone to the local college rather than attending the first class university 400 miles from home.

The price for the robot 3 months ago was \$20,000--far less than the cost of a few months of other, probably suboptimal, care. It seemed justifiable then and even more so now.

Upon entering your office you ask (computers now respond to the human voice) your computer to give you an update on Mother who is at home with "George." Within seconds you have on your screen the report from the robot. You learn that your mother arose at 7:00 am (you knew that but "George" is programmed to let you know 24 hours a day what Mother does), went into the bathroom where she spent 15 minutes before coming into the kitchen. He reports that you left 5 minutes later and that Mother had coffee and toast--or at least she used the toaster and took the coffeepot out of the coffee maker. Next, she turned on the stove (probably

to boil water for her morning egg) and left the kitchen. 5 minutes later, "George" reminded her (he speaks in a pleasant male voice for Mother has always preferred the company of men and responds best to them) about the stove and she returned to the kitchen and remained there for another 20 minutes. She turned the stove off. After breakfast, "George" reports that Mother left the house by the back door but stayed in the garden.

You are relieved that she didn't leave the garden for you vividly remember last Thursday's scare when "George" sent out a panic call after Mother failed to heed his warning and went marching down the street with "George" in hot pursuit--his voice is programmed to increase in depth and assume a directive and even stern tone should Mother endanger herself. If she fails to heed him, he sends a warning signal to your (and your wife's) office computer as well as to the closest police station. He also dials the phone of two neighbors--who hopefully are home. You were in the middle of a session when all this happened but

were relieved when a neighbor responded to "George's" distress call, brought mother back home and the call to the busy police force was cancelled with an "all clear" signal.

Mother and her electronic companion spend the day together and you and your wife are moderately comfortable at work knowing that she has a more reliable sitter with her than anyone else you might have hired. "George" responds to Mother's voice and speaks to her in a pleasant voice. He never gets irritated no matter how many times she tells him the same story. He doesn't heave a sigh and roll his eyes when she loses something for more than 90% of the time he is able to tell her exactly where it is--almost all of her things, including clothes, jewelry, watch, keys, etc., have been invisibly bar-coded. When Mother asks, "Where is my diamond?" the robot has, in memory, where she last placed it. He usually can direct her to almost the exact location--even if the diamond ring has fallen under the bed.

The robot is even tempered and has a special powerful, long life battery so it will be years before he suffers from "burn out" and, in contrast to most humans, will tell you 6 months before his battery actually needs to be recharged. "George" is on duty all the time, needs no "benefit package" except for a yearly tune-up, doesn't have to be protected by a special

liability insurance policy, has a huge memory for details and works quickly and quietly. He cannot clean the floor if Mother is incontinent, he cannot get her a drink of water if she is ill and in bed, he has not yet been programmed to push a wheel chair--although he has that capability should Mother ever need to be in one. He can, however, remember where Mother was incontinent and warn her to avoid a puddle of urine on the kitchen floor and he can be programmed to remind you before going to work (when she is in bed with a "cold") to put a pitcher of water, a glass and a straw at her bedside. He has sensors so that he can periodically check her vital signs and also detect changes in her mood by noting changes in her voice as well as any major change in her daily routine.

During the period of adjustment to having "George" in your home, your family was pleased by how much easier caring for your mother is when he is around. She accepted him well and now calls him "my best friend." You look forward to installing in "George" the module, which will expand his range of affect as well as his intelligence so that he will be able to amuse mother, read her the paper and print out letters which she might dictate. These features seemed a bit extravagant when the salesman told you about them but, now that Mother and your family have accepted and learned to appreciate "George", you feel that the extra expense is worth it in terms of enhancing your mother's quality of life.

At times, you find that you are a bit jealous of "George" as well as Mother's affection for him. You even tell yourself that having these feelings is irrational for, after all, he is just a fancy machine.

Or, is he?

ROBOTS FOR THE ELDERLY – IN THE NEWS:

Japan uses robots to keep elderly company

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By KAZUHIRO SHIMAMURA

TOKYO (March 27, 1999 9:45 p.m. EST <http://www.nandotimes.com>) -

Japan's Matsushita Electric Industrial Co. Ltd. is developing robotic bears, cats and tigers as pets to comfort the growing number of old people in the country.

With 27 percent of the population expected to be over 65 by 2025, it expects a growing and increasingly lucrative market for a gadget that can even save its owners' lives.

Weighing just one kilogram, the furry robot, available in cat, tiger and bear varieties, smiles and delivers verbal greetings when touched, according to Matsushita spokesman Yoshihiro Kitadeya.

A microchip inside the pet stores every interaction with its owner and analyses the log to decide for itself when to wake up and kick off a conversation with a friendly "good morning," Kitadeya said. "Its eyes are composed of a liquid crystal display panel so the robot can smile at you or act like a living pet by simulating sleepy eyes," said the spokesman.

The robotic pet's information logs can be accessed through telecommunication links such as mobile telephones to monitor interactions with owners living without human company.

"Depending on how you program it, the pet can start conversations when a room is quiet and help monitor the user's health," said the spokesman for Matsushita, maker of brands such as Panasonic, Technics, National and Quasar.

A long period of silence from an owner can trigger the pet to make a mobile telephone call informing caretakers or relatives of a possible problem, he explained. "In the past, robots like this could only mimic the motions of real animals solely for the purpose of entertainment," said Kitadeya.

Now the questionable fortune of having a robotic pet for company is available at a cost of about 50,000 yen (\$420) each and 500,000 yen with the whole remote-monitoring system.

The pets are scheduled for release in 2001.

Matsushita isn't the only company seeking to prise open the wallets of the elderly.

At least one company has been featured in the media for offering an ash-storage system for land-short Japan. Once your relative has passed on, the firm offers to store the ash in a warehouse. At a special shrine, visiting mourners simply key in their own code and the right ashes are automatically delivered to the spot ready for prayers to be offered.

On the Internet, home pages are available for relatives to pay virtual visit to ancestors' graves from anywhere in the world.

Matsushita Electric Works Ltd., a leading electric equipment and construction materials maker, already sells products targeted at the older market, from special bathtubs to "friendly" stairways.

It built a high-tech nursing home last year with each of its 80 rooms equipped with monitoring systems and "barrier-free" furniture. "We expect making products for the elderly to become one of the company's major businesses in the near future," said the company's general manager of public relations, Tomio Kado.

<http://www.nytimes.com/2004/03/05/international/asia/05JAPA.html?8hpb>

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Japan Seeks Robotic Help in Caring for the Aged

By JAMES BROOKE

MACHIDA, Japan— With an electronic whir, the machine released a dollop of "peach body shampoo," a kind of body wash. Then, as the cleansing bubbling action kicked in, Toshiko Shibahara, 89, settled back to enjoy the wash and soak cycle of her nursing home's new human washing machine.

"The temperature is just right — the bubbles are really comfortable," she said, happily sealed up to her neck inside the Sanyo Electric Company's latest elder care product. Turning to an attendant hovering around the pink, clamshell-shaped "assisted-care bath," she asked, "May I have a bit more water, please?"

Futuristic images of elderly Japanese going through rinse and dry cycles in rows of washing machines may evoke chills. But they also point to where the world's most rapidly aging nation is heading.

This spring Japanese companies plan to start marketing a "robot suit," a motorized, battery-operated pair of pants designed to help the aged and infirm move around on their own. Then there is the Wakamaru, a mobile, three-foot-high speaking robot equipped with two camera eyes. It is used largely by working people to keep an eye on their elderly parents at home.

These devices and others in the works will push Japanese sales of domestic robots to \$14 billion in 2010 and \$40 billion in 2025 from nearly \$4 billion currently, according to the Japan Robot Association.

Leaders of the Philippines and Thailand, two countries that are negotiating free trade pacts with Japan, suggest a different route: granting work visas to tens of thousands of foreign nurses. But that is unlikely in a nation that last year granted asylum to only 10 refugees and in the last decade has issued about 50,000 work visas a year — a fraction of the 640,000 immigrants a year that demographers say are necessary to prevent Japan's population from shrinking.

Building on such xenophobia, Japan's nurses' unions successfully lobbied

lawmakers of the governing Liberal Democratic Party in late February to block the admission of foreign doctors and nurses.

Caught between Japan's high labor costs and anti-immigrant sentiment, some mainstream politicians have even suggested exporting some of Japan's elderly to Thailand and the Philippines, but that has never won much popular support.

So even though the human washing machine retails for almost \$50,000, enough to pay a year's wages for two Filipino nurses, robotic home care may lie in the future for Japan's aging millions. Fueling the demand is the decision by the government to push for home care for the elderly.

Nursing homes are not seen as a financially viable option in a society where the portion of people aged 65 or over is forecast to soar to 36 percent in 2050, from 19 percent today. By that time there may be only one worker for every retiree.

But Japanese women increasingly rebel against traditional expectations that they will stay home to care for aged relatives, creating an ever-larger pool of elderly people in need of care. "There are 600 would-be residents on the waiting list here," said Yukiko Sato, general manager of the Katsura-ryo nursing home here, which has only 80 residents.

A year ago Katsura-ryo became one of the first 100 pioneer companies in Japan to buy Sanyo's new washing machine for people.

"Residents say it is really good because they warm their whole body, they can take the bath on their own, they can protect their privacy," Ms. Sato said. "As for the staff, it means less burden on their backs. Also, they can save time, because the whole procedure can be done in a very short time."

To operate the washer, the user sits in a chair that is rolled backward into place. The sides of the machine then close like a clamshell, forming an instant tub with the person's head sticking out the top. Shampooing and drying is done by hand.

At a Sanyo office in Tokyo, Hiroaki Otsubo, a general director for biomedical business development, noted that the washing machine had

been developed by Mitsuru Haruyama, a businessman crippled by muscular dystrophy.

"Some people in the industry say Japanese people are not able to accept a robot as a nurse, that they attach importance to the humanity aspect," Mr. Otsubo said. "So we are stuck in the middle between efficiency and nursing with a human touch. But if you pay attention to the humanity side, you obviously need labor power."

But several elderly women living in Katsura-ryo said they rather enjoyed their robotic baths.

"It automatically washes my body, so I am quite happy about it," said Kuni Kikuchi, an 88-year-old in a wheelchair who is paralyzed on her left side after a stroke. "These bubbles are good for the massage effect."

Eiko Suzuki, 73, generally agreed, saying: "I like both ways. But it is a machine and it hasn't got a heart. So once they set the program they can't change it midway."

Ms. Shibahara, whom the nursing home chose to demonstrate the washing machine, said: "With this `hirb' you don't get a chill. You feel always warm."

On the front of each machine Sanyo stamps "HIRB," short for harmony in roll-lo bathing, because people are rolled in. But for older Americans it might evoke memories of another effort to humanize a machine — the Disney movie about "Herbie," the Volkswagen "love bug" with feelings.



Franck Robichon for The New York Times

Toshiko Shibahara in the new human washing machine. "The temperature is just right — the bubbles are really comfortable," she said.



Franck Robichon for The New York Times

Toshiko Shibahara, enjoying a bath in an automatic washing machine for humans in the Katsura-ryo nursing home in Machida, Japan.