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AS FINANCIAL CRISIS WANES, ASEAN+3 MEET IN MANILA

Prime Minister Keizo Obuchi traveled to the Philippines Nov. 28, for a summit meeting of the Association of South East Asian Nations (ASEAN), Japan, China and the Republic of Korea (ASEAN+3). A ten-nation Asian grouping, ASEAN is striving toward regional free trade and security agreements, and now meets annually with its three northern neighbors. The Prime Minister joined other leaders in noting that the region is coming out of its recent financial crisis, as all ASEAN members are reporting economic growth this year. Mr. Obuchi told the grouping that now is the time to stress human resources, and announced a \$500 million "Obuchi Plan" focusing on "people skills." Japan played a key role in helping Asia recover from its financial crisis, supplying billions in assistance. While in Manila, the Prime Minister also held the first ever three-way. summit-level talks between Japan, China, and the Republic of Korea, to boost dialogue and cooperation in Northeast Asia. The Manila summit covered a broad range of issues from lowering tariffs, to emphasizing information technology, to strengthening regional security through a "code-of-conduct" to govern territorial disputes. The Prime Minister praised enhanced Japan-ASEAN cooperation, "as we strive to ensure the peace and prosperity of Asia in the 21st century," and said he would continue to "devote my utmost to our Asian diplomacy. ASEAN groups Brunei, Cambodia, Laos, Indonesia, Malaysia, Myanmar, the Philippines, Singapore, Thailand and Vietnam."

(see page 2)



Japan's Emperor Akihito waves to cheering crowds with Empress Michiko upon his departure from a ceremony celebrating the 10th anniversary of the Monarch's ascension to the throne at the National Theater in Tokyo, Nov. 12. (AP Photo/ Eriko Sugita, POOL)

PEACE, PROSPERITY FOR 21ST CENTURY

Following the meetings in Manila, the Prime Minister issued a statement. He said the very fact that a Joint Statement on future cooperation across a broad spectrum of issues was adopted by ASEAN+3 was of great significance itself. The highlights:

"It is imperative that we follow up this Joint Statement steadily with concrete actions and I intend to instruct the Minister for Foreign Affairs and other related Cabinet members to ensure that Japan plays a full role in this regard," he said. The Prime Minister's summary of the major achievements of the summit centered on three main points.

First, he said that based on the findings of the Okuda Mission, (a group of experts that studied Japan's future role in Asia and produced an action report), "I announced a comprehensive plan for enhancing human resources development and human resources exchanges in East Asia. All of the leaders expressed high praise for this Plan...the Chair kindly suggested that we call this the "Obuchi Plan."

"The approximately \$80 billion in assistance which Japan has steadily implemented for Asia, consisted primarily of emergency financial assistance to alleviate the plight of the nations of East Asia severely affected by the currency and economic crises. Now that for the most part, the economies of East Asia have overcome the crisis and are on a track to recovery, our task is to work together to prevent the reoccurrence of a crisis, and to build a foundation for medium- to long-term stable economic development. As a concrete step to this end, I announced on this occasion the assistance measures compiled with a focus on "people."

The Prime Minster continued: "Secondly, all of the leaders of ASEAN expressed their welcome and appreciation, when I stated that Japan is prepared to enhance and expand assistance in order to redress economic disparity within the ASEAN region, and enhance the organizational capacity of ASEAN so that the ASEAN 10 can develop smoothly as a cooperative group. I am confident that through such assistance ASEAN will become a strong partner for Japan as we strive to ensure the peace and prosperity of Asia in the 21st century.

"Thirdly, I explained my views about the Kyushu-Okinawa Summit (Group of Eight), which Japan will host as the G-8 Chair next year, and I was able to gain valuable input from the leaders. As

MEASURES TAKEN IN ASIAN CRISIS

- 1. From July 1997 to Nov. 1998, Japan announced \$44 billion in assistance measures. These measures include: a) bilateral cooperation in the IMF-led package; b) assistance for private investment; c) facilitation of trade financing; d) assistance to the socially vulnerable; e) assistance for structural reform in human resources.
- 2. The New Miyazawa Initiative launched in Oct. 1998 is a \$30 billion package of support measures, of which \$15 billion is for the medium- to long-term financial needs for recovery in Asian countries, and another \$15 billion is for short-term capital needs during the process of implementing reform.
- 3. Japan proposed a \$3 billion Asian Currency Crisis Support Facility in the Asian Development Bank (ADB) under the New Miyazawa Initiative. This facility helps Asian countries in financing through guarantees to private bank loans and bond insurance, and interest subsidies. It can be utilized under the "Asian Growth and Recovery Initiative" announced by Japan and the U.S. in Nov. 1998.
- 4. A \$5 billion Special Yen Loan Facility (over three years) was announced in Dec. 98, for infrastructure development to stimulate employment and structural reforms. One percent interest over 40 years applies.
- 5. At the Japan-ASEAN Summit in Dec. 1998, Japan announced \$20 million in local training measures for 10,000 people in industry.

Japan hosts this summit in Asia in the milestone year of 2000, in order to reflect the perspective of Asia as it looks forward to the 21st century, I will continue to bear in mind the valuable insights which the leaders offered and intend to further enhance dialogue..."

Finally, in closing he referred to the three-way dialogue with China and South Korea: "I have long since envisioned a dialogue among the leaders of Japan, China and the Republic of Korea, the three nations which serve as important partners for East Asia and it was indeed a great pleasure for me...when for the first time ever we had a frank exchange of views focusing primarily on economic issues...I believe that our discussions will imbue the process of dialogue and cooperation in Northeast Asia with renewed impetus. I am determined to continue to devote my utmost to our Asian diplomacy, in order to further build upon the emerging momentum for enhancing cooperation in the East Asian region."

NEWS DIGEST

- On Nov. 15, diplomat Koichiro Matsura assumed the post of Director General of the United Nations Educational, Scientific and Cultural Organization (UNESCO). Matsura, 62, Japan's Ambassador to France, was selected by a vote of 146 to 5 to replace Spain's Federico Mayor. Mr. Matsura has authored books on the diplomacy of economic cooperation and Japan-U.S. relations. Japan pays about 25 percent of UNESCO's \$544 million biennial budget.
- On Oct. 1, the Export Import Bank of Japan and the Overseas Economic Cooperation Fund, Japan, were formally merged into the Japan Bank for International Cooperation (JBIC). The new bank becomes the core organization instrumental for the country's external cooperation. The wholly stateowned JBIC has outstanding investment and loans of about \$166.9 billion and was created as part of the government's administrative reform drive.
- Foreign Minister Yohei Kono issued a statement on Nov. 15 welcoming the fact that the U.S. and China successfully concluded an agreement on China's accession to the World Trade Organization (WTO).
 Japan and China concluded their own bilateral agreement on the WTO when Prime Minister Obuchi visited Beijing last July.
- On the Seattle Ministerial Meeting (Nov. 30-Dec. 3), Foreign Minister Kono said, "It is truly regrettable that this (failure to launch a new trade round) has become the outcome," however, he emphasized the significance of WTO and said that, "Japan will redouble its efforts to launch the new round negotiations as soon as possible so that the multilateral trade system under the WTO will further develop."
- In what Prime Minister Obuchi termed "a drastic reform of parliament," he will now exchange questions and answers with other party leaders on the Diet floor. The sessions, modeled on the British House of Commons will be held regularly.
- French Prime Minister and Mrs. Lionel Jospin will
 pay an official working visit to Japan Dec. 16-18.
 They will receive an audience with the Emperor
 and Empress. King Abdullah II Bin Al-Hussein
 and Queen Rania Al-Abdullah visited Japan Nov.
 30-Dec. 4, for official meetings and were hosted at
 a State Dinner by the Emperor and the Empress.
 Japan offered Jordan \$400 million in aid.
- On Nov. 30 the government granted \$3.8 million to the World Food Programme for relief in Angola.

HELPING TIMOR

Prime Minister Obuchi stopped in Jakarta on his way to the ASEAN summit, and new Indonesian President Abdurrahman Wahid visited Japan Nov. 15-16. The two leaders discussed the strife afflicting the South Asian nation.

The province of East Timor is in upheaval following a referendum on independence last August. Indonesia is already the largest recipient of Japan's bilateral development aid, and Japan is playing an important role in the international effort to bring peace to East Timor.

Japan will host a meeting of international donors in Tokyo Dec. 16-17. Japan has also pledged \$100 million to the Trust Fund of the multinational force operating in East Timor. Foreign Minister Yohei Kono recently told U.N. Secretary General Kofi Annan that Japan is considering a further \$28 million in humanitarian assistance.

Mr. Akira Takahashi, Special Advisor to the President of the Japan International Cooperation Agency, has been appointed Deputy Special Representative of the Secretary General for Humanitarian Assistance of the U.N. Transitional Administration in East Timor.

And, on Nov. 19, in response to a request from the United Nations High Commissioner for Refugees (UNHCR), Japan agreed to provide airlift services of Japanese Self Defense Forces (SDF) transport planes between Surabaya (Java Island) and Kupang (West Timor), to provide logistical support for the UNHCR's humanitarian operations.

The decision is in accordance with the International Peace Cooperation Law. The advance team of the SDF and the liaison officials left Japan on Nov. 22 and will stay until Feb. 21, 2000. The team consists of 150 Air Self-Defense Force personnel, six liaison officers, four C-130H transport planes and one multi-purpose assistance plane (U-4).

Since the direct ballot was taken in East Timor, the widescale violence between pro- and anti-independence forces has generated a massive refugee flow into West Timor. The living conditions of these displaced persons have now become critical from a humanitarian viewpoint.

While international humanitarian organizations are working together to assist the displaced persons in West Timor, Japanese officials say they intend to proactively assist these efforts. Japan has already decided to contribute \$2 million to the activities of the UNHCR and the World Food Programme (WFP), and at the request of the UNHCR has extended material grant assistance under the Humanitarian Relief Stockpile Supply System.

TRENDS IN JAPAN

A theme-park-like shopping mall designed to attract spendthrift women has opened on Tokyo's waterfront. In just the first five days of operations a total of 400,000 people, mostly young women, flocked to "Venus Fort." The builders of this new female stronghold are pinning their hopes on

women, nocked to venus Fort. The builders of the new female stronghold are pinning their hopes on women being likelier to loosen their purse strings than men and to spearhead greater personal consumption.

From the outside the mall looks like a warehouse, but go inside and you will be in for a surprise. It is a giant replica of a 17th or 18th century European town. The shopping area covers about 226,000 square feet, or the same as two baseball fields, and there are five plazas, each constructed around a different theme – church, olives, fountains, hope, and happiness. They are linked by the main 1,300-foot long promenade, and as wide as 36 feet. One can relax and watch time go by, as every hour on the ceiling a vast virtual sky changes from bright blue daylight to dusk then to dawn.

A total of 0.9 miles of shopping streets are there for customers to enjoy. Shops selling clothes, cosmetics, and trinkets, as well as beauty salons and cafes, 137 stores in all, line the streets; about two-fifths are the first-ever Japanese outlets of foreign shops. Crowds of students, housewives, and sightseers come in the daytime and, since everything is open until late – the shops close at 10 p.m., the restaurants at 11 p.m. – it is also very popular with women on their way home from work and young couples.

Why is it known as a women's theme park? The shops and cafes provide for everything a young woman could want in fashion, beauty, and dining. The target ages are women in their 20s. Much more than a tourist attraction, repeat visitors are showing up in large numbers. The mall is so big one could get lost, but a crew of attendants patrols the complex and provides directions. Adding to the atmosphere, they, too, are dressed in period costume.

One of the proudest features of this shopping mall are the luxurious ladies' restrooms which are among the county's largest and resemble those of first-class hotels. Yet there are hardly any facilities for men. They have almost nowhere to go at all, and in this fortress of femininity, men are most likely to be boyfriends carrying their partner's bags or fathers minding the kids while their wives are shopping.

EDUCATION STANDARDS

In recent years, the Ministry of Education has changed its priorities from cramming knowledge into students' heads, to giving students more freedom by greatly reducing the curriculum. At the same time, there have recently been cases of college students who cannot even do fractions, which is prompting growing criticism that this style of education has resulted in a drop in basic academic standards. The Ministry of Education itself is also gravely concerned about this problem and has decided to launch an investigation.

According to a survey by the National Center for University Entrance Examinations, on the academic ability of first-year college students, many deans at national universities felt that falling standards were becoming a problem. The survey also found that falling standards were seen as a problem in 70 percent of private institutions and that in 45 percent of them catch-up classes were being held in math, science and other subjects to go over topics aready thoroughly taught in high school.

With these findings in mind, for three years starting in fiscal 2000, the Ministry of Education will collect and analyze the results from the past 20 years of the uniform preliminary entrance exams for public colleges. It has also decided that from 2001 it will investigate the scholastic aptitude of about 100,000 elementary, middle and high school students all over the country, by means of standardized tests in Japanese, math, science and social studies.

The background to the Ministry's switch to more freedom was that in recent years issues like truancy and bullying have been hitting the headlines. It is thought that the old rote-teaching style of education was unable to combat these problems. The aim of relieving the pressure on students was to offer them a "happier school life."

On the other hand, if Japan is to maintain its technological innovation it must offer a high level of specialist education, particularly at scientific and engineering colleges and graduate schools. That in turn must be based on fundamental knowledge taught systematically at the primary and secondary levels. A drop in basic academic ability risks jeopardizing the whole future of education.

The education authorities are now faced with the dilemma of delivering both more freedom and higher standards. In the Meiji-era government poured its efforts into making children study. Searching for an alternative way, authorities switched course and elected to give students more freedom. Now, however, efforts are being made to seek a middle ground.





BY SHELDON LEE SNOOK

Many in the American business community question whether Japan is serious about opening its market to imports or whether, through a variety of high-visibility import promotion measures, it is operating a shrewd propaganda campaign designed to deflect criticism of its import record. After spending nearly a year inside Japan's Ministry of International Trade and Industry (MITI), I have concluded that the answer is – like much else in Japan – ambiguous.

There is a growing consensus in the U.S. regarding steps that the Japanese government could take to increase imports. For example, further deregulation, increased U.S. investment by easing the way for mergers and acquisitions, continued harmonization of Japanese standards to international norms and tariff reductions all could lead to more imports. But to answer the more practical questions surrounding whether today's Japan is opening to imports, you have to distinguish between real and perceived barriers and look closely at particular industries.

To some Americans who have been doing business here for years, one of the biggest barriers is homegrown – the failure of many U.S. companies to understand the Japanese market. Other often-cited obstacles include the high cost of doing business in Japan, difficulty hiring Japanese staff and subtle discrimination by landlords and others who simply prefer not to deal with foreigners. But despite these problems, whether real or perceived, the number of U.S. firms succeeding in Japan continues to grow.

To be sure, getting exports into Japan can be difficult. The Transport Ministry recently released a White Paper acknowledging that Japan's distribution system, in particular its port operations, are expensive and inconvenient relative to those of nearby countries. As a result, some shippers are bypassing Japan's ports and shipping to Korea. Because of the declining competitiveness of Japan's ports, one noted critic has called for a "big bang" in Japan's international transportation policies.

Beyond the problems that confront imports across the board, can be industry-specific barriers that, to non-Japanese, may be the most inscrutable of all. American companies may have a hard time cracking the system, particularly in industries where informal cartels exist, or those that have been tightly regulated by the government. For example, despite years of efforts to break into the market though lower prices and higher quality, the market share of U.S. flat-glass imports remains just a fraction of the total.

Apart from the problem industries, though, Japan seems to be making a genuine effort to promote imports, particularly where foreign products can offer a solution to a pressing problem. Because of its graying population and the expected rise in health and welfare costs, Japan must find a way to reduce its health care expenditures, or risk placing an unbearable financial burden on its shrinking working-age population. The Washington, D.C. based Health Industry Manufacturers Association, which recently opened a Tokyo office, is encouraging Japan's government to reduce the average length of its hospital stays - among the longest in the world, and five-times those in the U.S. - by introducing more U.S.-made, high-tech home health-care equipment into its aged-care system.

MITI and the U.S. Department of Commerce agreed to focus on increasing health care imports to Japan, as part of a broader trade promotion cooperative agreement. As a result, local government procurement information in Japan should be made more readily available to U.S. manufacturers.

At the heart of Japan's import promotion efforts is JETRO (Japan External Trade Organization), which, although little known in the U.S., is a household name in Japan. Some have derided JETRO for being a propaganda tool in the Japanese government's efforts to downplay U.S.-Japan trade friction. Consistent with that view, JETRO is registered as a foreign agent by the U.S. Department of Justice. But JETRO certainly is more than that. Every year it spends millions of dollars encouraging foreign companies to enter the Japanese market, for example, by sponsoring events to link U.S. manufacturers with Japanese importers. The hundreds of smaller firms that JETRO has helped probably don't care whether the help is called propaganda, they just seem happy to get it.

Despite our tendency to become preoccupied with the problems, it is important to keep in mind that Japan's economy, the world's second largest and five or six times larger than China's, already is America's second largest export market – taking in more U.S. exports in 1996 than the U.K., Germany and Italy combined. Japan is also a key partner in the region's security arrangements. How hard the U.S. presses on narrower trade issues must be balanced against these factors.

Is Japan really opening to imports? The

answer seems to lie in the eyes of the beholder. Certainly, resistance in some sectors remains intractable, with little likelihood for change in the foreseeable future. Some critics believe that the reason other sectors are being exposed to competition is not necessarily to benefit Japan's consumers or to facilitate trade. Rather, in a twist on industrial policy, the goal is to strengthen those sectors through carefully controlled competition.

From inside MITI, it seems that Japan is gradually opening to imports, but progress must be measured sector-by-sector. The key for U.S. firms is to look through the propaganda and pessimism, and assess for themselves the possibilities that lie in Japan's markets. Some American companies will like what they see.

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HIGH-TECH CHASE OF AMERICA'S CUP
Japan is in the midst of its third challenge toward the America's Cup, the world's largest yacht racing tournament, which took off for the 30th time at Auckland, New Zealand, in October. Having been defeated in the semifinal round in both 1992 and 1995, this time the Japanese team is determined to advance its sails to the finals with the help of the latest technologies, carrying with it Japan's pride as a maritime nation.

The America's Cup dates back to 1851, when a U.S. schooner named "America" won a race in Britain, receiving a cup of pure silver to mark the victory. The cup was then taken back to the U.S. and has been known ever since as the America's Cup. The regatta is held every four years.

The cup holder hosts a challenge from yachts from other nations. Including the preliminary rounds, races to determine the cup's destiny go on for nearly five months. The U.S. won the first 24 contests until the Australian team took the cup in 1983. The U.S. team regained it in Australia, but at the 29th event New Zealand won, bringing the 30th contest back to the Pacific.



Japanese yacht Nippon, right, in action against America One during race 6 in the Louis Vuitton Cup, sailed off Auckland, New Zealand, Dec. 9. America One won the race in light conditions. Japan succeeded in advancing to the semi final round of six which begins Jan. 2. (AP Photo/David Hallett/Fotopress)

The Japanese team, aptly named the Nippon Challenge, is currently taking part in the Louis Vuitton Cup Challenger Races for the America's Cup, being fought among 15 teams from 10 countries. In 1995 the racing syndicate raised \$57 million from sponsors, but because of Japan's economic slump the funds in 1999 plummeted to only \$31 million. Still, the two new Japanese yachts, launched in July are the team's pride, endowed with the nation's latest technological achievements.

The two yachts are sail No. JPN 44, nicknamed *Asura*, and JPN 52, called *Idaten*. Both measure 24 meters from head to tail and 4.5 meters in width, and their masts are 35 meters tall. *Asura* – named after a deity known in Buddhism both as a belligerent devil and a guardian god – is designed for high-power performance under strong winds, while *Idaten* – the Buddhist deity *Skanda*, best known in Japan as a fast runner – is made to glide fast in gentle winds.

A technical team led by professor Hideaki Miyata of the University of Tokyo designed the yachts. They first analyzed three years' worth of data on the winds off the Auckland coast and 55 years' worth of the area's meteorological data, then made full use of such technologies as computer graphics to create the designs. They chose lightweight materials, including carbon fiber, thus saving hundreds of kilograms while doubling the yachts' strength.

The most impressive feature of *Asura* and *Idaten*, though, is the fiber-optic network reaching all corners of their structures. The network forms the core of a system that detects damages suffered during the race. The Japanese team's skipper steering these state-of-the-art yachts is Peter Gilmour, an Australian who ranks No.1 in match racing (a type of yachting event). He was recruited two years ago and moved to Japan with his family to join the team. The crew led by Gilmour includes former rugby and American football players to counter the larger and stronger physiques of Western crew members. The top six among the 11 challengers from seven nations have advanced to the semifinals, the Japanese team included.



WHAT TO LOOK FOR IN SUMI-E

essential. While most of us paint what we can see or imagine, a good Japanese ink painting brings viewers satisfaction through its representation of reality by what it suggests, and by what it leaves out of the picture. Sumi-e do not include shadows. They create a suggestion of a third dimension in this two-dimensional form by the use of lines and gradations of ink color. Darker lines are used for those portions that are closer and lighter ones – sometimes so pale you can scarcely see them – show the parts of the picture that are farther away from the viewer, or that only need to be barely suggested.

Masters of *sumi-e* pare away all but the

One of the great pleasures and frustrations of *sumi-e* lies in the effort it takes to prepare gradations – a sweep of stroke that includes something dark, something light, and something in between. The master of *sumi-e* learns how to twist, lay, pause, scrub, push, pull, tease, and flow a brush across the paper – all of which provide different effects. An artist may take an inky brush and separate hairs with the fingers to give a "dry brush" look – a method that can be used to provide fish with fins, Zen priests with beards and skimpy hair, or tree branches with rough dimensionality. *Sumi-e* artists speak of "bones" or "flesh." The bones are the lines while the tones, the gradations of ink, are its flesh.

One of the differences between an experienced artist and a beginner is the understanding of water, and how much to mix with ink, how much to remove from the brush before dipping it, and how much to get rid of before touching brush to paper. Too much water and the brushstroke spreads unattractively beyond its borders. If there's too little, the effect is disappointing. In sumi-e, everything is a matter of balance. Then, there's the paper, the bane of a sumi-e beginner's life. No matter what paper you buy, you are never certain if it will work. Most *sumi-e* is created on rice paper (after the beginner has outgrown the need to use cheap, but ugly, newsprint). But some rice paper is too absorbent. Some does not absorb enough.

No matter which paper you choose, part of the illusion provided by *sumi-e* depends on the artist's knowing exactly when to add a stroke of ink to something that is still damp – neither too wet nor too dry. And even today, the better artists will



A *sumie* painting by Aiko Shimura Erickson displaying bamboo in gold overlaid by a *tanka*, or short poem.

sometimes paint on silk, as the Chinese did centuries ago.

One of the most characteristic elements of *sumi-e* is the use of negative space, or areas that have nothing painted in them, but which provide an aesthetic balance to the painting. In many *sumi-e*, you will see a poem and a painting. Often, the poem is on the right, while the painting is on the left. A plum branch may make a connection with poetry that mentions a plum blossom. But rules were made to be broken, as can be seen in a painting by Aiko Shimura Erickson, who teaches in the Smithsonian Associate program. In one painting, she covered much of her paper with a scene of bamboo. Her poem then cascades over and among the leaves, not separate from them, in a striking way.

Sumi-e are a creation of the moment. Although an artist may (and does) practice a given stroke repeatedly, when it comes time to lay brush to paper, the strokes should be sure and swift because creating something that breathes is far more important in this art form than perfection of detail. Although time and practice, together with native ability, are the backbone of good sumi-e, those who are unwilling to risk ruining a painting in the midst of creative discovery miss the richest rewards.

There is much to say about *sumi-e* and its special rules of composition, its symbolism, its love of the abstract and the concrete, as well as its different styles. Who, for example, could forget *sumi-e's* characterizations of people? The most memorable, perhaps, are Zen priests with their baleful stares or their expressions of limitless joy. But there is only so much a writer can convey about *sumi-e*. I hope these articles will inspire some readers to investigate this simple and complex art.

* Carol Marleigh Kline, is a freelance writer in Washington, D.C., who spent 11 years living in Japan. Next month she will write about "The Art of Netsuke."

ROBOTS AS MAN'S BEST FRIEND

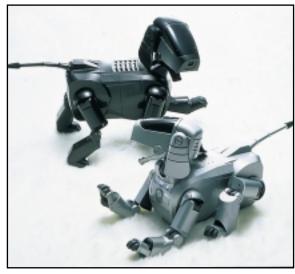
It is a spreading phenomenon, and one in which Japan excels. It basically involves taking computer power, creating a robot, altering its form, revising its applications and making it a source of human entertainment. The American-born Furby is one example, which was sold out within weeks of hitting the market. A Furby can only speak its own language when it's first bought, but as the owner interacts with it, it begins to pick up English words like "hungry" and "fun." This speech acquisition goes far beyond the mere repetition of set words offered by animated dolls.

In Japan, the applications are being taken to new heights. The latest is Sony's new "entertainment robot," AIBO. It looks like something out of Star Wars, writes Yoshida Noriyuki of Yomiuri Shimbun in Look Japan (11/99), with a silver body, eyes that shine green and red, and four legs that move. Put a ball in front of it, and it reaches its legs out it; leave it alone, and it wags its tail in boredom and sulks.

Sony put AIBO on the market over the Internet on June 1, and sold all 3,000 units in 20 minutes at \$2,200 each. AIBO comes equipped with seven different types of sensors, including camera, microphone, heat sensor, and pressure sensor. It has 18 motorized joints which create a rich range of realistic and expressive movements. Its senses, movement, and emotional expression are all controlled by a state-of-the-art computer processor.

The name AIBO combines aibo ("close friend" or "partner" in Japanese) and AI as in "artificial intelligence." The robot's program includes sub-routines for "instincts" and "feelings," that characterize live animals, and an individual personality of each AIBO develops through its interactions with people. If the temperature is too warm, for example, the robot's "instinct" to protect its circuits and motor come into play, and its movements become lethargic. There are programs for six different emotions, including joy, sadness, and anger. If its owner pets it, the program will produce a happy mood. The interaction can produce an infinite range of personalities, according to Otsuki Tadashi, general manager of Sony's Entertainment Robot Business **Incubation Department.**

Another popular computerized "pet" is a new TV remote control shaped like the popular Japanese cartoon character, Doraemon. Dubbed Doraemon by its manufacturer, Epoch, this gadget



Two AIBO robot dogs at play. (Sony Corp.)

allows users to input spoken commands like "turn on." Once programed, it will turn on the TV, adjust the volume, and do other tasks in response to spoken commands. It also replies with Doraemon's voice.

Many other pet robots are being introduced. Ishii Takemochi, professor emeritus at the University of Tokyo and information science expert says, "Japan has two strengths. First, it has creativity to develop popular fictional characters such as Sanrio's Hello Kitty, or any other animation and game characters. Second, Japan excels in the fields of electronics and mechatronics, of which combine electronics with physical mechanisms. Together, these two strengths have enabled the Japanese to accept artificial life-forms without misgivings."

The market has been inundated with portable PCs with digital cameras. These devices can recognize individuals, read written words, and perform a wide array of actions. Adding legs and a face eases people's fear of machines.

Pet robots can be comforting and useful companions. The Humanoid Robot Project at Waseda University is researching human emotions and developing a robot that can participate in a conversation while recognizing the human partner's tone of voice. Professor Hashimoto Shuji of Waseda's School of Science and Engineering says that "the ability to feel an emotional affinity is an important element for human-robot coexistence."

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