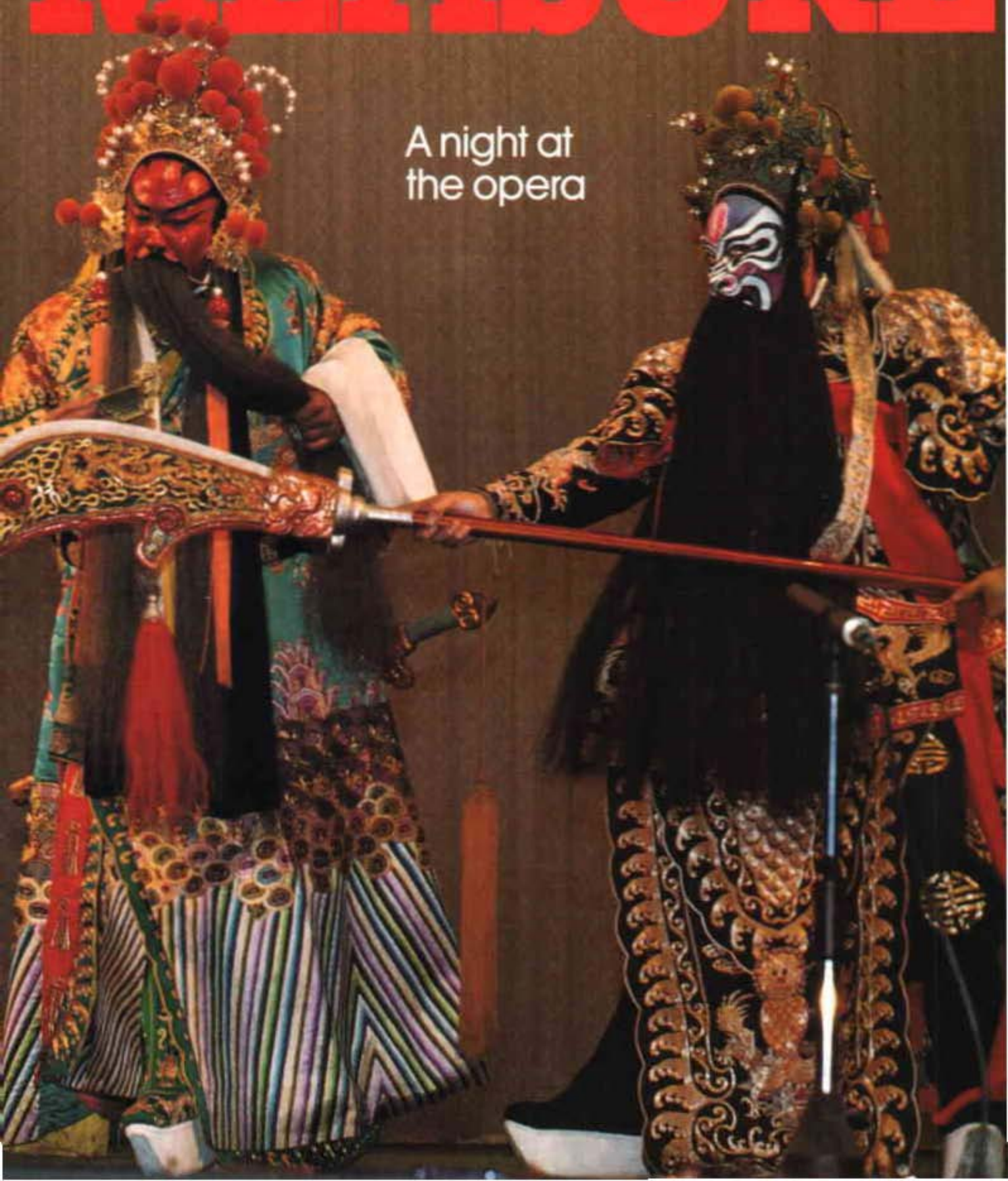


# MEASURE

A night at  
the opera





page 6



page 22



**On the cover: Jianhua Qi, a personnel rep in China Hewlett-Packard's Beijing office, captures the beauty and majesty of the Chinese Opera in Beijing with this colorful photo, submitted to *Measure* (see page 14 for more employee photos).**

**Breaking the rules**

**3**

Teamwork, including a "Vulcan mind-meld," produced amazing results on a new family of HP computers.

**Passing the test**

**6**

Ned Barnholt, vice president and general manager of the Test and Measurement Organization, talks about the unfolding T&M revolution.

**Three parts, one whole**

**11**

Chinese people in Hong Kong, Taipei and Beijing talk openly about a day when they'll be part of one vast, reunited country.

**If you print them, they will come**

**14**

We asked for your photos and (whew!) did you send them—more than 100 in all. Some of the best are included in this photo feature.

**Play it again, Len**

**18**

HP Labs' Len Cutler gave up a promising musical career to become the father of the world-famous HP atomic clock.

**Your Turn**

**21**

**It's another world**

**22**

What has 75 countries, 60 currencies and is one of the most volatile parts of the world? HP's International Sales Branch.

**Letter from John Young**

**26**

**ExtraMeasure**

**28**

**MEASURE**

Editor:  
Jay Coleman\*

Art Director:  
Annette Yotavitz

Associate editors:  
Cornelia Bayley  
Betty Gerard\*


Graphic designer:  
Thomas J. Brown

Circulation:  
Tricia Neal Chan

*Measure* is published six times a year for employees and associates of Hewlett-Packard Company. It is produced by Corporate Communications, Employee Communications Department, Mary Anne Easley, manager. Address correspondence to *Measure*, Hewlett-Packard Company, 20BR, P.O. Box 10301, Palo Alto, California 94304-1181 USA. The telephone number is (415) 857-4144. Employees should report changes of address to their local personnel department.

© Copyright 1992 by Hewlett-Packard Company. Material may be reprinted with permission.  
\*Member, International Association of Business Communicators (IABC)

Hewlett-Packard Company is an international manufacturer of measurement and computation products and systems recognized for excellence in quality and support. The company's products and services are used in industry, business, engineering, science, medicine and education in approximately 100 countries. HP employs 89,000 people worldwide and had revenue of \$14.5 billion in its 1991 fiscal year.

 *Measure* magazine is printed on recycled paper.

MOVED LATELY? CHANGE OF ADDRESS SHOULD BE REPORTED TO YOUR PERSONNEL DEPARTMENT.



MARC LONGWOOD

Teamwork, including a “Vulcan mind-meld,” produced amazing results on a new family of HP computers.

It used to take about two hours to assemble HP 9000 or HP 3000 systems and servers, but a joint manufacturing/engineering team in Roseville, California, including test operator Helen Nicol, reduced the time to 10 minutes.

# Breaking the rules

*By Jay Coleman*

ROSEVILLE, California—When a team of HP people here set out three years ago to revolutionize the design and manufacture of a new line of computer systems and servers, it kept two simple rules in mind:

1. Follow the rules.
2. If the rules don't make sense, break them.

In June 1991 the gutsy experiment paid off when HP introduced 16 business systems and servers—additions to the HP 9000 and HP 3000 computer families. The systems outperform comparably priced IBM and Digital Equipment Corporation

products by up to six times.

"We flipped all the rules around and produced some very hot products," says Scott Stallard, who managed the engineering team.

In the end, the team produced some amazing results, including:

- Cutting the original cost estimate of the product in half;
- Slashing system testing time from 14 hours to 90 minutes;
- Drastically paring the production line to one-ninth its original size;
- Trimming the time it takes employees to assemble and test the product from six hours to one;
- Reducing assembly time from two hours to 10 minutes.

What was so radical about the way the Roseville team approached this program—code-named Nova? The answer is an intricate blend of technology and sociology.

The first step was to choose some of the best people from the two organizations, the Networked Computer Manufacturing Operation (NCMO) and the General Systems Lab (GSL) within the Systems Technology Division, and assign them to Nova full time.

Typically, engineers work on several projects for a fraction of time each,

**"Tom Tiernan... and I did an immediate Vulcan mind-meld."**

says Joe Mixsell, computer systems manufacturing manager for NCMO. "The results," he says, "are fractured, including your sense of ownership."

Instead, the team of engineers and production people moved next to each



**Abed Aoun and other Nova workers assemble products in a streamlined area that is one-ninth its original size.**

other and held a series of value-sharing meetings before starting the project.

"We did virtually everything together ... worked, laughed, ate and went to movies instead of just getting together when we had problems," says Dave Young, NCMO engineer. "That gave us a shared commitment from the start."

"Tom Tiernan, the Nova manufacturing project manager, and I did an immediate Vulcan mind-meld when we met," says John Adelsbach, GSL lab manager, referring to the ability of "Star Trek's" Mr. Spock to merge his brain with another person's.

Sometimes the team members' objectives weren't the same. "For example," says Chuck Olson, GSL manager for Nova electronics, "the lab says 'Build the prototype as fast as possible'; manufacturing says 'We need more time to debug.'"

The solution was to break another rule: two separate prototype builds—one so manufacturing could deliver the promised units to engineering quickly and the second to allow manufacturing the time to debug the process.

Each week group members reviewed each other's progress. Keeping the cost low was the team's No. 1 goal.

"When we first rolled up the costs and took it to the marketing people, they said, 'You're out of your mind. No one will buy our system at that price,'" says Tom Mitchell, who led the GSL systems-management team.

So the team looked for ways to avoid the "same-old-way" syndrome.

One suggestion was to eliminate the key switch on the front of the system to save money.

"But *all* of our systems have a key switch," some HP people argued.

"What if Nova *doesn't* have a key switch?" the team asked marketing.

"We'd still sell the same number of systems," marketing said.

Done. No key switch.

As the team simplified Nova's processes and parts, the original system

**"It took guts for upper management to take that trust-your-people approach."**

HP envisioned became one system with 16 versions—six HP 9000 Series 800 and 10 HP 3000 Series 900 business systems and servers. Instead of one high-volume production line churning out one product, Nova evolved into a more customized line—but still with the ability to maintain high total production volumes at very low cost.

"Nova is the best project I've ever worked on," says technician Danny Membrere. "If people on the line were here on a weekend turning a screw, the managers were right beside us turning a screw. No one worried about titles."

While Roseville was the hub in the project, the spokes reached to IIP entities as far away as Boise, Idaho; Guadalajara, Mexico; Bristol, England; Grenoble, France—15 HP organizations in all contributed to Nova's development.

No site was more involved outside the United States than Böblingen, Germany. Computer Systems Böblingen added 14

***"You can take great technology and screw it up... we made it work."***

engineers to the Roseville design team, then developed additional Nova products in concert with the team at the Böblingen Manufacturing Operation (BMO). The German R&D team then moved to the production line—a first for BMO.

"They frequently saw design alternatives and made suggestions," says John Connolly, GSL product-design manager. "They made a major contribution."

The Nova team also benefitted from two earlier HP successes:

- Several members had worked on the Frontier program, the successful Roseville Terminals Division high-volume production line, which used a similar concurrent-engineering and teamwork approach in 1987.
- Nova's development came right on the heels of the release of the innovative HP Apollo 9000 Series 700 workstation family. The new systems and servers



Production employees Abed Aoun and Helen Nicol worked elbow-to-elbow with managers (from left) Chuck Olson and Dave Young to produce the new systems.

use some of the same RISC (reduced-instruction-set computing) technology as the high-speed workstations (code named Snakes).

The real key was the right level of senior-management support, notes GSL's Tom Mitchell. Upper-level managers within the Computer Systems Organization left Nova decisions to the functional team and only got involved when the team needed help. "It took guts for upper management to take that trust-your-people approach," he says.

Adds John Connolly, "You can take great technology and screw it up, or you can take a great team and not do anything productive with it. We had great technology, a great team and enlightened management support—and we made it work." ■

## There's more to come

While Nova is one of the most recent and impressive HP time-to-market success stories, it's hardly the only one.

In fact, improving HP's product-generation process—how well the company brings the right products to market at the right time and price—is one of the breakthrough (Hoshin) goals set by President and Chief Executive Officer John Young and Chief Operating Officer Dean Morton for 1992.

The Operations Committee of the HP Management Council is guiding the activities of the Product Processes Organization (PPO) under Director Bill Kay. The PPO focuses on improving the company's hardware and software processes.

# Passing the test

By Liz Wavada

*HP made its name in instruments. But as the years passed and opportunities emerged, the company diversified. At times, interest in HP computers and peripherals seemed to eclipse many of HP's "behind-the-scenes" products: network analyzers, signal generators, frequency synthesizers, multimeters, and so forth.*

*Nonetheless, instruments remain a dynamic part of Hewlett-Packard. The unfolding revolution in commercial communications is presenting lucrative opportunities for the company's Test and Measurement Organization under Vice President and General Manager Ned Barnholt.*

*Ned offers Measure readers some insights into the altered landscape facing T&M—a new terrain that will call for unprecedented teamwork across divisions.*

**Q** I understand that many Test and Measurement customers view testing during manufacturing as a non-value-added activity and are doing more simulation of their designs during the R&D phase. If this is a growing trend, how will it affect our sales volume? Where does that leave T&M divisions that are the traditional "box makers"? What will our customers want from us in the future, if not instruments?

**A** There are a lot of elements to that question. Clearly, workstations and computer-aided-engineering systems have changed the way people design. Before, we'd sell instruments to sit on a bench and an engineer would use these instruments to test each prototype design. Now, customers are



**Says Ned Barnholt, vice president and general manager for Test and Measurement, "If the customer wants something 5 percent different, we'd better do it..."**

doing more design with simulation, so we need to have products that are part of this new design methodology—things like logic analyzers, logic-development systems and digital IC verification systems.

These can link to design systems and provide the real-life verification for a simulated design. Our microwave-design system is a software product that takes advantage of our expertise and many years of experience in microwave design. It also capitalizes on the fact that we build instruments as well by providing a very tight linkage between the design methodology and the measured data.

The second aspect of your question touches on the pressure to cut costs in all parts of manufacturing. Customers are consolidating processes and doing less testing. That trend definitely impacts our business. But while people want to do less testing, they also want more *sophisticated* testing. This is where we have the opportunity to do more than just sell boxes. We can sell our knowledge of test and our ability to sell more complete solutions.

Many customers are realizing that one of their “competencies” isn’t in building their own test systems. That’s HP’s business. And clearly, we can add value for customers who are looking for less test. We can help them develop their whole test strategy and do more of their job. On one hand, yes, you can say the trend is toward less testing, but on the other hand, it means we are doing a bigger portion of a customer’s job.

The test industry is going through a lot of changes—more changes than it’s ever seen. The real trick is to make sure we understand those changes. We need to get out in front and change ourselves so we can be the leader in shaping the



During a trip to Taipei, Ned meets with Shih Chien Yang, general director of Industry Development for the Taiwan government.

new paradigm for test. This means offering more application-focused solutions, doing a more complete job for our customers and taking advantage of international opportunities.

We have to be more than a box supplier. We’re going to grow and be prosperous in the ’90s by being a full-test vendor and by being available for full service to our customers. We’ve begun to formulate some strategies to do this and we have some good things going on now, but we must do a lot more in the coming year to make sure we’re really in line with this new paradigm.

We’ll be shifting some investments and refocusing some of the divisions’ charters. The traditional charters that grew up around instruments—the signal-generator charter, the spectrum-analyzer charter—are really blurring now as customers want more complete solutions. We have to learn to work together across divisions and to focus on markets, not just products.

In the ’90s, the customer is king. It used to be that we could invent anything and figure out a way to sell it. Now customers have a very clear idea of what they want and either we do it for them or someone else will. If the customers’ needs change, we need to change. If a customer’s business evolves, we need to evolve. We have to be absolutely rigorous in understanding user needs. If the customer wants something 5 percent different, we’d better do it or we’re going to lose the business. We never had to do that before.

**Q** With that in mind, what skills are essential and fundamental for IIP workers in the ’90s?

**A** ● We need employees who are flexible, who can accept change and realize that change is necessary. It can be an opportunity to learn something new and it can be exciting.

We need skills that are quite different from the traditional skill set we have depended on. In general, we will need higher skill levels, especially if we move to more self-directed teams. One skill that we'll have to work on a lot is teamwork—working as a group. We've had a lot of individual heroism over the years, but business is getting more complex and interdependent across divisions and functions.

We've made excellent progress in time-to-market, manufacturing costs and cycle time, but one of the big breakthroughs in the '90s is going to be in re-engineering cross-functional processes that can take the next step in improving our quality and productivity. This will require us to work together in teams and across functions like we've never done before.

**Q** ● Many of the issues facing Test and Measurement these days stem from the end of the Cold War and the decline in defense spending. Are the opportunities in the communications market big enough to make up for the decline in defense spending?

**A** ● Communications is certainly one of the biggest single opportunities we see. And by the way, I lump communications and information-processing together. It's just one big market

for information products that will be the dominant market for the '90s. Semiconductor testing is going to be another big market in the '90s, especially when it's related to the information marketplace.

It will take time, but there are other markets that can take up the slack as well. Examples include automotive electronics, consumer electronics—especially video—and even industrial electronics. We're reaching out to new customers in some non-traditional areas. We've actually been selling some of our products recently to food manufacturers, pharmaceutical companies and chemical companies. As their problems become more sophisticated, they're turning to some of our tools for measuring. Some of the applications are really interesting, such as using a network analyzer to test the moisture content of a gum ball!

Electronics is becoming more and more pervasive. In the past, we focused on aerospace/defense because that was a big chunk and it fit our technology base particularly well. But as that business declines, we need to reach out to some of these other markets for incremental growth.

**Q** ● Can we "re-tool" fast enough to take advantage of the opportunities before someone else grabs them?

**A** ● I think we can and we've already begun. All of this has happened very quickly—but we need to do more—and do it faster. Some divisions are in excellent shape, but some are still struggling with it. We need to work with those who haven't quite found their niche for the '90s and make sure

they have a clear set of opportunities on their plate that will allow them to grow. We have to make sure the growth opportunities are balanced across all of our T&M divisions. This process is our highest priority in T&M.

One last comment about defense: While aerospace/defense is declining as an industry, the electronic content of military systems is actually growing. So T&M is still going to have a lot of opportunities in aerospace/defense. It's a very large market so we don't want to ignore it, but we want to reduce our dependence on it and get more balance with a different set of industries.

**Q** ● Both John Young and Dean Morton have talked recently about the need for us to eliminate work that's not necessary. What advice can you give people to streamline their jobs or help decide what really needs to be done?

**A** ● To me the key is TQC (total quality control). I remember years ago when we were looking at order-processing. Somebody put on the wall all of the different steps to fulfill an order and it literally filled a wall of the auditorium. We stepped back and said, "Boy, is that complex. It must take a tremendous amount of resources." And it did. So we went back and re-engineered the process. Instead of filling an auditorium wall, it was a 10-foot square of far fewer steps. To me, that's the essence of what we're talking about.

The trick is picking those processes where we can really make a big difference. A lot of these are cross-functional





"(HP people) are bright, dedicated, down to earth and have high integrity...people I really enjoy being around," says Ned, who talks with Santa Clara (California) Division's Hiroko Clark.

processes. Management needs to identify the critical processes that we want to tackle. Individuals can help by raising issues and bringing to managers' attention opportunities to change the way they do their jobs.

I think we have to seriously question everything we're doing; ask if it's a contribution to the business. There's a little bit of fear, I'm sure, because if I reduce my work, my job may go away. We've got to get past that to where people understand that the success of the organization is what's going to bring individual success. There are going to be plenty of things to do. It may be different from what people are doing today, but frankly, it would be better if we could get rid of some of the more mechanical things and get on with more of the creative parts of our job.

**Q:** You've been with HP 25 years. What things do you see and hear that make you feel good about working here? What does HP mean to you?

**A:** The first thing I think about when I think about HP is the people. There's a special attractiveness to HP people. They're bright, dedicated, down-to-earth people with high integrity—people I really enjoy being around.

Beyond that, I think of the products and I have a sense of pride in what we do—that we make a difference. Our purpose in T&M is to provide the enabling tools that allow advancements in the field of electronics. To the extent that we do a good job, we can have an impact on our destiny.

As the leader in the test-and-measurement industry, we have a sense of pride

that we do that well. I want to be associated with a winner and I look at HP as a winner in all our different businesses.

The next things I think about are the challenges. I guess I've always felt empowered, that I could make a difference. Over the years, a lot of people in the company have given me opportunities to take initiative, to tackle something I wanted to tackle and they've listened to my opinion on something whether it was right or wrong. I've always felt challenged at HP over the years and that makes it exciting.

**Q:** These can be stressful times for HP people. What do you do to relax in your leisure time? How do you take your mind off the everyday pressures of business?

# Ned

**A** My family—my wife, Jimi, our son Scott and daughters, Kim and Kerry—is very important to me and I try to spend as much free time as I can with them. I get pulled by the business needs and the family needs, and I try to do the best I can to balance that. But I always feel guilty when I'm on a trip and missing the school play.

I try to reserve some quality time on weekends or vacation to do something with my family, whether it's sports, trips or going out to dinner.

Sports and athletics have always been important to me. I like to ski and play tennis. I also try to exercise regularly and recently took up biking as well. I don't do it anywhere near as much as I'd like to, but I've always been a real sports fan and try to do as much as I can.

I also enjoy travel. We backpack and camp a lot. I love the outdoors. There's something about sitting on a mountaintop for a couple of hours and just looking at the nature around you that is very relaxing. The physical exertion of getting there and being tired when you're done is a good way to escape the pressures of day-to-day business. I feel the same way about skiing. If I can just find time to get away, I find my body and mind rest a little easier.

**Q** You mentioned this tug between work and family. Do you think this is going to be something HP will have to pay more attention to?



**A love of the outdoors draws Ned, his daughter, Kim, wife, Jimi, and son Scott to the coast. "I try to reserve some quality time on weekends or vacation," he says.**

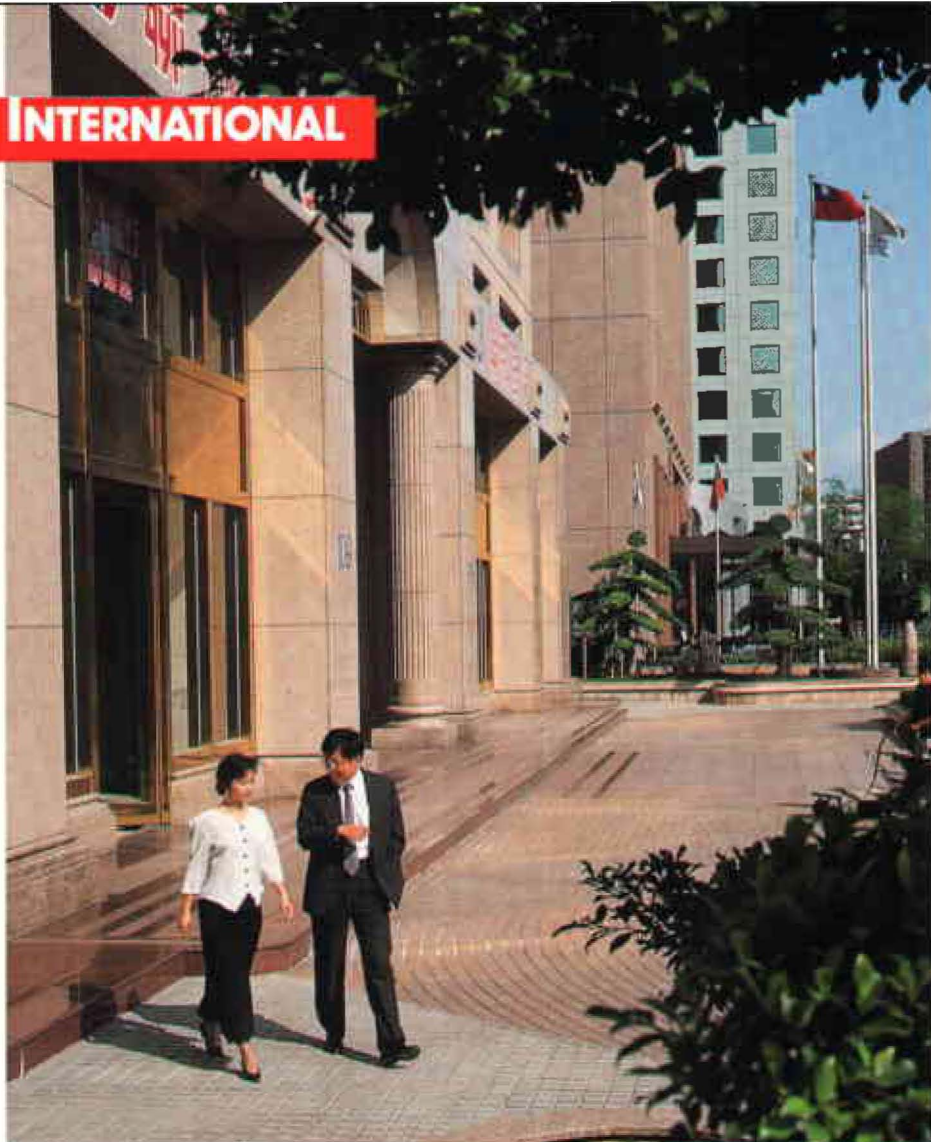
**A** I'm sure we will. As part of the Management Council, I sit on committees and groups that look at changes in our policies and practices. Clearly, there are changing expectations of people regarding family and free time. There are steps the company has already taken with things like flexible hours and some of our other benefits programs to accommodate individual situations.

We review these issues regularly to meet changing needs. I can't predict where it's going to go or what's going to happen, but I think these issues

will continue to be major ones for the company in the years ahead.

The changes in society are putting more demands on companies. I think that HP and the people I work with are very sensitive to the issues that concern employees, and we're trying continually to make HP a better place to work. ■

*(Liz Wavada is the communicator for the Spokane (Washington) Division. —Editor)*



Sophia Chen and Juber Chu stroll through downtown Taipei near Hewlett-Packard Taiwan headquarters. HP first established a presence in Taiwan in 1970.

三位一体

Chinese people in Hong Kong, Taipei and Beijing talk openly about a day when they'll be a part of one vast, reunited country. In the meantime, the HP people are finding innovative ways to do business.

*The Chinese brush strokes (left) symbolize HP's philosophy in Northeast Asia: three parts, one whole.*

*By Brad Whitworth*

**K**aiyu Lu, China Hewlett-Packard's international procurement manager, can pick up his phone and call Bjorn Tsai, his colleague in Taipei. He can sit down at a computer and send him an HP Desk message, or send him a fax. But even if he could get a visa, he couldn't fly from Beijing's international airport to Taipei's. There are no direct flights connecting these two Asian capitals.

Direct travel between the People's Republic of China on the mainland (commonly referred to as China) and the Republic of China (Taiwan) is prohibited. More than 50 years of political differences have created barriers between the Chinese on both sides of the 100-mile-wide Formosa Straits.

Likewise, travel into and out of Hong Kong across its short, mountainous border with China is restricted. The Hong Kong government, for example, imposes a daily limit on Chinese tourists.

But things are changing quickly in the political and economic relationships between these three territories. Hong Kong, a British colony for the last 140 years, reverts to Chinese rule in 1997. Monies from Taiwan are being invested in businesses in entrepreneurial Hong Kong and once-off-limits China.

But even greater links exist: a common language, culture and family ties across the three areas. The result for HP is increasing business opportunities in the years ahead.

"There are lots of U.S.-based electronics companies in Taiwan, Hong Kong and China," says Lee Ting, general manager of HP's newly formed Northeast Asia (China, Hong Kong, Taiwan) region. "Very few have a significant presence in all three spots, but that doesn't mean they won't. With our headstart, HP can be the major player in a greater Chinese marketplace."

# 三位一体

JOSEPH BRIGNOLLO



**Ping Yang, a customer engineer at China Hewlett-Packard's Customer Service Center, troubleshoots a problem.**



**Kwok Cheong Chim leaves HP's Asia Pacific headquarters offices in Hong Kong's Bond Centre to make a sales call.**

JOSEPH BRIGNOLLO

Lee knows the region well. In 1970 he moved to Taipei as the first general manager of Hewlett-Packard Taiwan. He and Bill Doolittle made the first HP business contacts in China in 1972.

Is a united China a possibility or simply wishful thinking? There are still tremendous differences between the political ideologies of Beijing and Taipei, which more than 40 years ago led to the civil war in China and split the country into two separate governments. There are lingering doubts about what will happen to Hong Kong when the British leave and the territory reverts to China.

But there are positive signs on the horizon. According to the *Japan Daily* newspaper, Taiwan's economics minister has boldly proposed linking Taiwan, China and Hong Kong. Vincent Siew told a seminar in Taipei in November that combining the economic strengths of the three Chinese-speaking areas would create "an industrial zone second to none in the world." The government in Taiwan's Mainland Affairs Council has

issued its official "Guidelines for National Unification" with a goal of establishing "a democratic, free and equitably prosperous China."

The potential certainly exists. Technology and management expertise from Taiwan, capital and marketing wisdom from Hong Kong, along with natural resources and manpower from China would create a powerful market force.

The economies are already moving closer. Everywhere you look, you find capital beginning to find its way across borders that have been tough for people to cross. Chinese companies are expanding their presence in Hong Kong. Manufacturing operations and families in Hong Kong are moving across the border to the special economic zone the Chinese have set up in Shenzhen. Taiwanese businesses are moving labor-intensive operations to the mainland.

"Many of our big customers in Taiwan have invested in facilities in China," says HP's Cheng-Yaw Sun, former computer systems sales manager in Taiwan, who

recently moved to tackle a similar assignment for CHP in Beijing. "The situation will force the governments to continue to re-examine their policies."

Policies will continue to change as companies look for new sources of labor and new markets. For example, Taiwanese companies have developed a powerful reputation over the years for quality personal-computer products at very competitive prices. These companies hold a commanding share of the worldwide market, accounting for 36 percent of all the color monitors, 35 percent of the keyboards and 72 percent of all the mice sold in the world. But to continue that world leadership in the years ahead, they have to look beyond the island's shores for quality products and lower labor rates.

"Mitac is considering moving production to lower labor-rate areas," says C.S. Ho, president of the \$500 million Taiwanese electronics company and chairman of the Taipei Computer Association. "The mainland Chinese

Although China, Taiwan and Hong Kong are separate political regions today, they're heading down a path that may lead to one of the world's largest markets.



market may not be ready to meet our needs for hardware manufacturing, but for software development, the opportunity is there today."

Hewlett-Packard has been looking throughout the region, too, for companies that can supply HP with high-quality, low-cost subassemblies. Scott Whiteman, manager of HP's International Procurement Operation (IPO) for Northeast Asia, based in Taiwan, actively scours the region for new suppliers. His group is now turning toward China as a long-term investment in the area's future.

"We're now looking to suppliers in China to source labor-intensive products for HP... assemblies like cables, transformers, coils and such," he says. Some of the world's most automated printed-circuit-board factories are in Hong Kong, "tucked away in old buildings that you'd think are apartments," Scott adds. "The equipment in one shop was the latest and newest I've seen outside of Japan."

In addition, China has natural resources to fuel economic growth. For example, 80 percent of the world's material for magnets comes from China. This resource is already under investigation by the IPO.

Scott's organization has 10 people, including a one-person satellite office in Beijing. But he still has political realities to deal with. "We would like to bring Kaiyu Lu, our man in Beijing, to Taiwan for meetings and seminars. But as a mainland Chinese, he hasn't been able to get a visa to visit." However, Scott keeps working on the process and hopes to receive the visa in 1992.

As a result of such difficulties, training programs for CHP employees and customers often are "imported" from HP's education center in Taiwan. "CHP customers and AEs would like to have foreign training, maybe in Singapore or

	China	Taiwan	Hong Kong
<b>GNP</b>	\$363.8B	\$161.7B	\$70.1B
<b>Population</b>	1,134M	20.2M	5.8M
<b>Area (sq. mi.)</b>	3,691,521	13,814	404
<b>HP employees</b>	400	450	200
<b>HP offices</b>	4	4	1
<b>HP factories</b>	2	0	0
<b>Year HP started</b>	1985	1970	1979
<b>Leading export trade partner</b>	Hong Kong	U.S.	U.S.
<b>Leading import trade partner</b>	Hong Kong	Japan	China
<b>People per PC</b>	2,286	20	30
<b>McDonald's restaurants</b>	1	49	58

Source: Information Please Almanac, Fortune, Hewlett-Packard

overseas," says Diana King, education-center manager. "But it's easier for us to take programs to them from Taiwan. And because of the common spoken language and similar written language, we find we can get more done than in an English-speaking class overseas."

Diana is also part of a regional team that's looking at an integration strategy for HP activities, like training, in the three territories. "How do we tap the expertise in Taiwan, Hong Kong and China? What is the role of each HP organization? These are some of the issues we hope to resolve," says Diana.

"Our test-and-measurement business is already combined for China and Hong Kong," says Philip Yu, former CHP general manager. "Because there are no language barriers, it's easy to get technical help for customers from any of the offices. And we're able to share the results of localization projects. More and more of that sharing will

happen in the future because it's the best way to improve productivity and profitability among the three regions."

"Greater China will be made a reality very soon, maybe by the turn of the century," says Shouqin Ren, CHP's vice general manager. "It's a natural thing from a business point of view. Our grandparents may have been enemies, but by the third or fourth generation, things are and will be much different. As the old Chinese saying goes, 'Blood is thicker than water.' Because of deep-rooted social, cultural and economic ties, we are real brothers." ■

*(Brad Whitworth is the Public Affairs manager for HP's Intercontinental Operations and a former Measure editor.—Editor)*

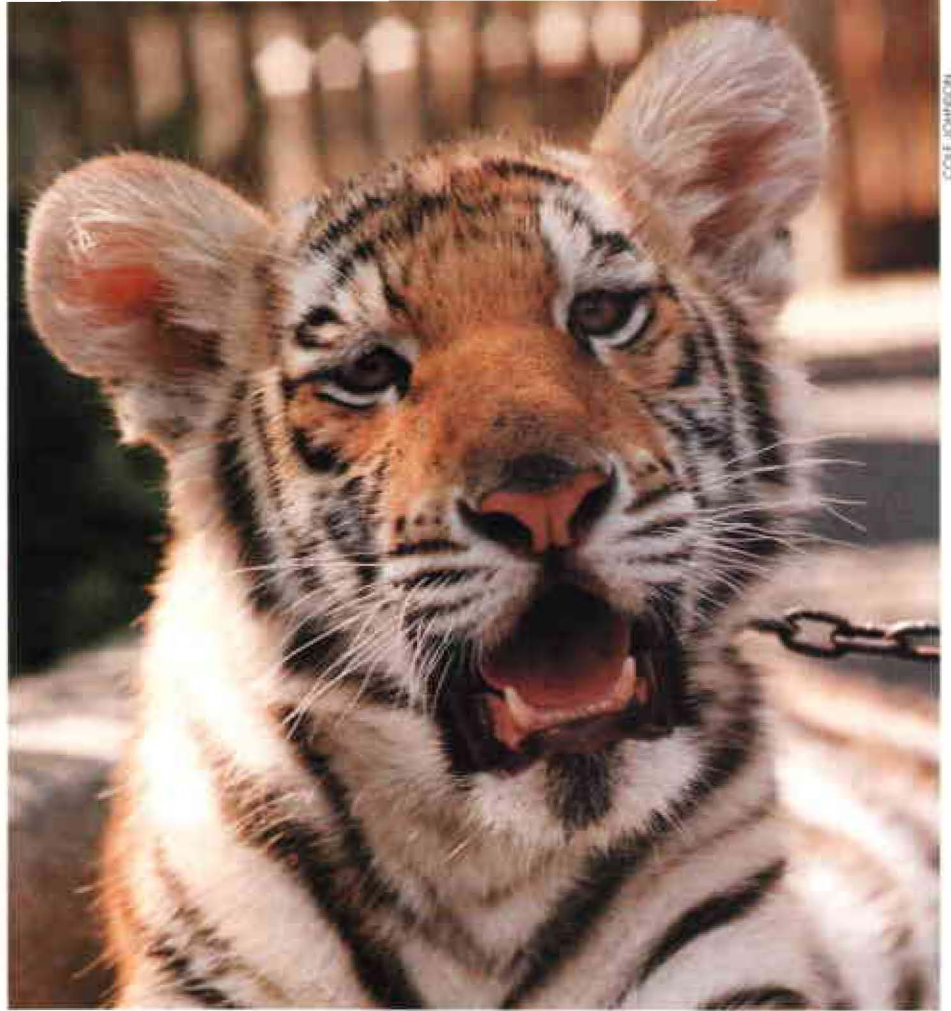
## If you print them, they will come

We weren't sure what the response would be when we asked employees to submit photos for *Measure's* back-cover, Parting Shot feature.

It turned out to be like a scene from the movie "Field of Dreams": If you print them, they will come.

Well, we've received more than 100 photos and they're still coming. They've come from as close as a few feet from the *Measure* office and from as far away as Beijing, China.

That's why we're devoting four pages to employee photos in this issue. Thanks to everyone who sent photos.—*Editor*



COLE JOHNSON



KEH PEI-ZH



above left

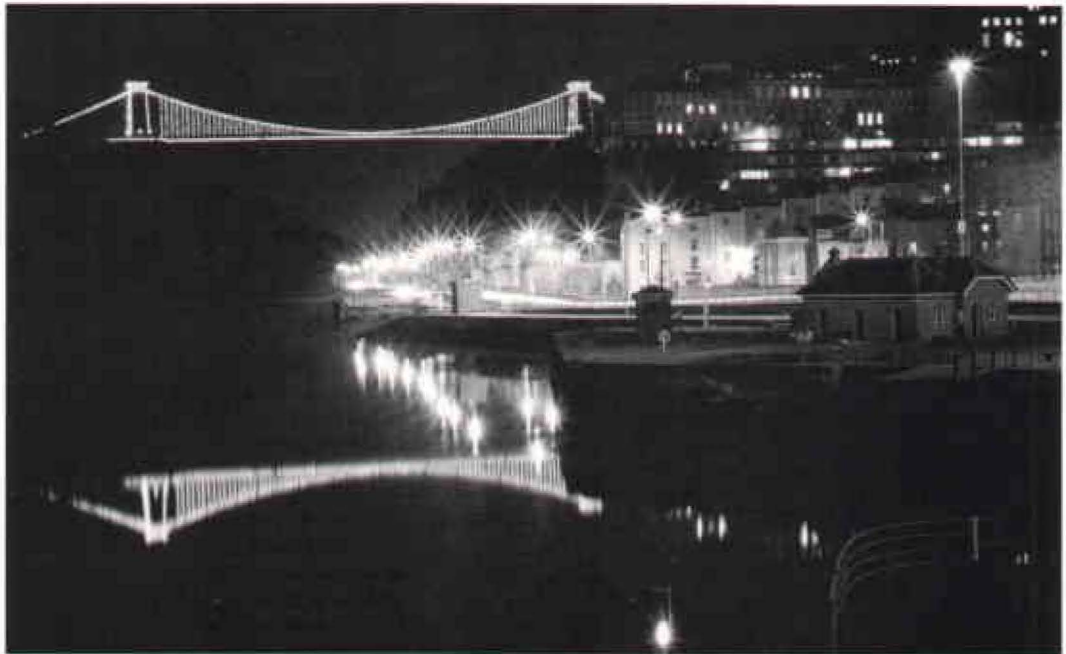
Cole Johnson from Corporate Computing and Services captured (photographically, that is) this 6-month-old, white/orange Bengal tiger during an HP department outing to Marine World African Safari in Vallejo, California.

left

Cupertino, California's Ken Perez was walking through an open-air market in Bangalore, India, in June 1981 when he took this striking photo.

above

Thousands of windmills dot the hills on the Altamont Pass east of Pleasanton, California, where Lon Overacker works in the HP sales office. Lon calls this 1990 photo "Cloud Dragon on the Altamont."



above

The Avon Gorge and Clifton Suspension Bridge are the sentinels to the Bristol, England, docks. Notes Bristol's Neil McCoubrey, "In 1885, after being jilted, Sara Ann Henley threw herself off

the bridge and fell the 245 feet to the river. She landed, uninjured, after her crinoline (petticoat) acted as a parachute. Sarah went on to live many more years."



**above**

"In my recent trip to Thailand," says Lim Kong Thien of HP Malaysia, "I visited the tribal people in the north. It was ironic to see a girl so young 'mothering' her little brother, while crying for her own mother."

**right**

Mother Nature provides beauty (rainbow) and the beast (the churning waters of Niagara Falls, Canada) for tourists on the boat "Maid of the Mist V." Hong Kong's David Shum took the photo last summer.







LORNA WOLF

left

"The symmetry and contrast of their markings intrigued me," says Lorna Wolf of Andover, Massachusetts, describing her photo of a group of zebras sipping a cool drink on the Masai Mara game reserve in Kenya.

below left

"I have long been interested in color and light, and how it changes the mood of a picture," wrote Jim Conrad from Boise, Idaho. "This photo explores the use of incandescent lighting to convey a sense of intimacy with a child (my son, B.J.) 'Learning the Trade.'"

below

A beautifully composed photo of an Oregon beach by JoAnn Allen of Vancouver, Washington, proves that you don't have to travel far from home to find striking photo opportunities.



JIM CONRAD



JOANN ALLEN

# Play it again, Len

By Gordon Brown

Released just this past December 31, the news announcement said that Hewlett-Packard had “unveiled the world’s most precise, commercially available time-keeping device—an atomic clock that keeps time to one second in 1.6 million years.” It further said that the new clock, the HP 5071A, offers twice the accuracy of the previous record holder, the HP 5061B, plus new levels of stability and reliability.

In both cases, as well as their predecessors going back to the original HP 5060A introduced in 1964, the questing mind of Len Cutler had been at work, shaping and sharpening their performance to reflect the highest levels of current technology. The results have been nothing less than spectacular, putting HP at the forefront of precision time-and-frequency standards around the world, adding substantially to the company’s prestige in science and technology, and showing very good returns on the balance sheet.

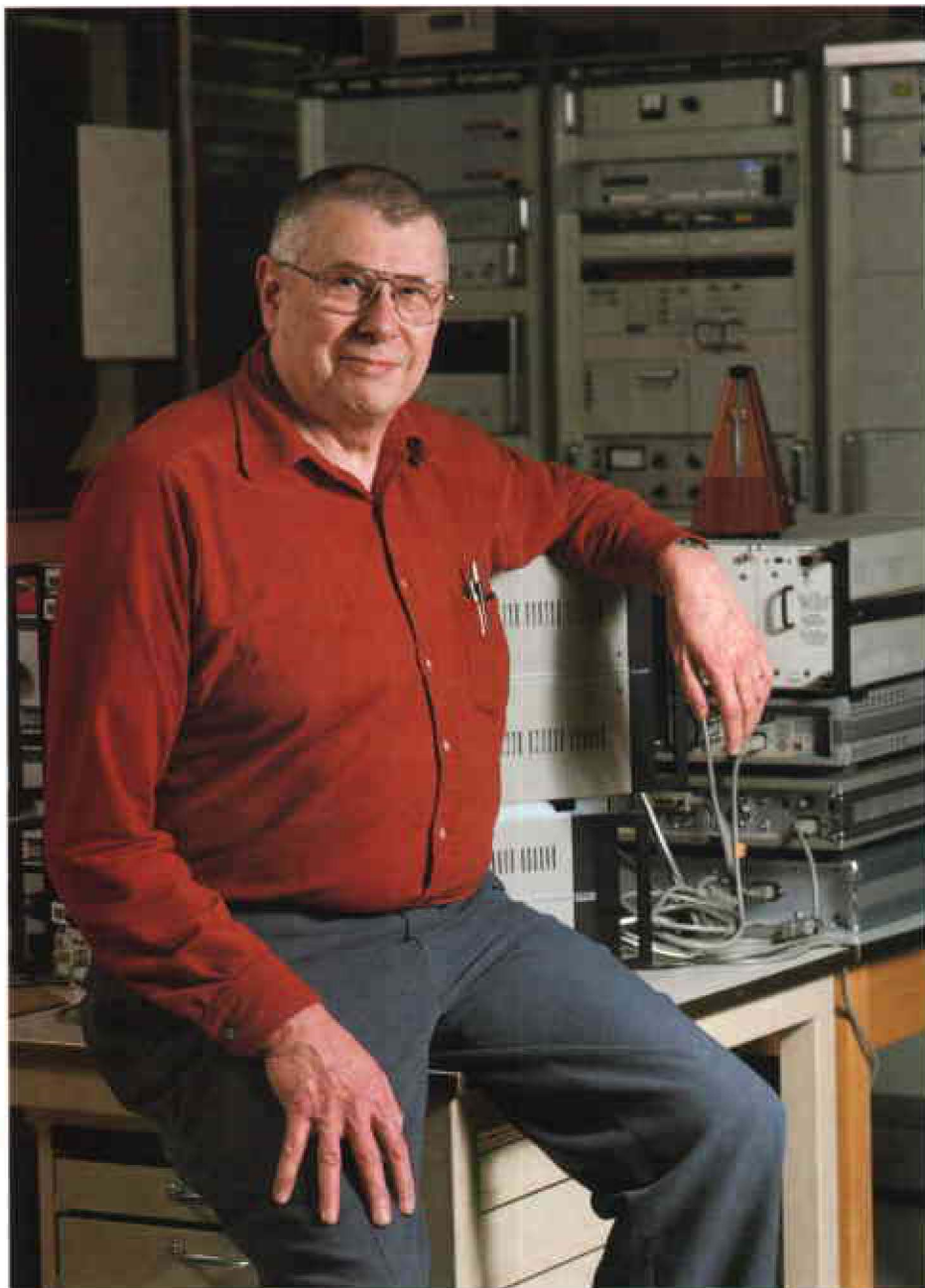
So how and where did HP find this person? And what did he find that has kept him around and busy since his first HP payday in 1957?

Len had plenty of choices in his early years in Los Angeles. There was music,

---

*“I decided that I liked the flavor of HP better.”*

for example, which his Russian-born parents strongly encouraged. In the early '40s, Len performed in the movie “Anchors Away!”—starring Frank Sinatra, Gene Kelly, Katherine Grayson and Jose Iturbi. Yes, Len pounded to the



“I didn’t think I was a good enough musician to be really successful in that direction,” says Len Cutler, who chose a career in technology instead.

score of Franz Liszt's Second Hungarian Rhapsody, along with 19 other young piano prodigies in the Hollywood Bowl!

Meanwhile, there were mathematics, science, radio technology and the art of fixing things, all drawing him down a different road. Reflecting on this, Len now says "I didn't think I was a good enough musician to be really successful in that direction." His central Los Angeles high school math and science teachers, especially, encouraged him toward a career in technology.

An 18-month hitch in the Navy seems to have settled that question. There, at

***It was clear that Len was the center of a small team devoted to frequency-standard engineering.***

Treasure Island Naval Station near San Francisco, he went through electronic technicians school, later becoming an instructor in radar and other communications technologies.

This was followed by a year at Hoffman Radio in Los Angeles, where he worked on frequency meters (sound familiar?).

Then it was off to Stanford University as an engineering major. Two things changed that. "I switched into physics because I wanted to get much more of the fundamental mathematics," Len says. "About the same time, I ran short of money and decided to go back to work for a couple of years."

That move actually lasted almost 10 years, from 1948 to 1957. During that period, Len joined a startup electronics company, moved from engineer to



**Len (in rear) accompanies one of two HP atomic clocks to Lausanne, Switzerland, in 1964 for a conference on the scientific measurement of time.**

V.P. of Engineering, married Dorothy ("Dottie" to friends), became a parent and dreamed of becoming a full-fledged physicist.

That dream, plus some job-related stresses, drew Len back to Palo Alto. The immediate goal was to obtain a job in electronics that would permit him to continue at Stanford. After a number of job interviews and offers, he chose Hewlett-Packard—even though it offered less pay—"because I decided that I liked the flavor of HP better."

Specifically, he liked the people. Bruce Wholey, his supervisor, quickly took care of the pay problem. He said, "Len, this is nonsense," and immediately raised Cutler's salary. What impressed him, says Len, was "the friendliness, the knowledge that both Bill and Dave had of everything that was going on, the capabilities of Barney Oliver, who headed the lab, and of course, people like Al Bagley whom I knew quite well

and would work closely with in the future."

Using proceeds from the sale of shares in his previous employer's company, Len made the down payment on a Palo Alto home and set about the arduous business of sharing his time between work, school and family. It wasn't easy: "HIP was almost full time. Stanford was full time. Fortunately, the company funded my Stanford program, right up through graduate school and my Ph.D. in '66. I'm still very appreciative of that."

Shortly after joining the company, Len—at his request—became a member of Al Bagley's Frequency and Time Engineering department within the corporate laboratory. His challenge was to redesign a number of oscillators used in various instruments including counters. After succeeding there, he began working on higher-quality quartz oscillators

# Len

—again with considerable success.

By the turn of the decade it was evident that Len was the center of a small team devoted to frequency-standard engineering. One early result was the HP 5065 rubidium standard. Then the team's interest shifted to cesium, prompted in part by some Varian Associates engineers who had developed a 24-inch cesium tube that avoided some of the problems associated with rubidium.

In typical fashion, according to Len, Al Bagley suggested a 16-inch tube, one that could be packaged in a much smaller instrument. Agreeing on that, the team went to work on the circuitry, in the course of which they achieved the first solid-state standard.

By 1963, with the arrival of the new Varian tubes, they had it all together. One year later, under the care of Len, Al and Lee Bodily, two of the clocks were flown to Lausanne, Switzerland, the site of a global conference on chronometry, where they were introduced to the

**Len has remained the same guy—friendly, thoughtful and dedicated to science.**

world. In the process, the HP contingent demonstrated that—in comparing United States and Swiss time—the HP clock was almost 100 times more accurate than radio timing.

Other demonstrations followed, including one at Greenwich Observatory in England and another that tested and supported Einstein's theory of relativity.

The rest is history, very pleasing history as far as HP is concerned: recognition of the cesium clock as a



With son, Greg, at the wheel and Len serving as navigator, the Cutlers have won several motor-car rallies, using a computer Len developed.

world standard, numerous awards and patents, formation of the Frequency & Time Division (now Santa Clara Division) headed by Al Bagley (now retired), success in the marketplace, success in helping to prove Einstein's theory of relativity, continuing improvements and additions to the product line, including the laser interferometer, and—not least—a great deal of personal satisfaction for those involved.

Len and Al also are credited with inventing the laser interferometer.

Through it all, according to associates, Len has remained essentially the same guy—friendly, thoughtful, very dedicated to science (such as quantum physics and relativity theory) and not so dedicated or interested in administration. He himself recognized the latter trait during several assignments that put him in charge of organizations within HP Labs and the F&T Division. "Too distracting," he concluded.

But when it comes to ideas, he is still a leader. Along with his name on more than two dozen patents, Len has received numerous professional awards, notably IEEE Fellow, the IEEE's Morris Leeds Award in 1984, the Rabi Award in 1989 and election to the National Academy of Engineering in 1987.

In November 1990 Len was named HP's first Distinguished Contributor, Technical Staff. As the citation says, "Not only does the position recognize HP's gratitude to our most-valuable contributor, but it provides Len with even greater opportunities to pursue areas of mutual interest to himself and Hewlett-Packard."

As they say at Carnegie Hall: "Encore!" ■

*(HP retiree Gordon Brown was Measure editor from 1968 to 1982. —Editor)*

## Many happy (dividend) returns?

The article on HP stock (January-February 1992) was well done in terms of how and why its price fluctuates. However, I think the matter of dividends is (and probably should be) of even more interest to the many participants in HP's Employee Stock Purchase Plan.

Clearly, the Board of Directors set up the plan to encourage saving and to create employee enthusiasm for making the stock ever more valuable as a long-term investment. There is a much stronger case for stability of the dividend rate than there is in market price since control of the dividend lies in the hands of the company and the share price does not.

It is to be hoped that the recent 60 percent increase in dividend rate signals a change in policy that recognizes that HP has attained the size, diversity, stability and confidence to warrant a higher but adequately conservative return to HP investors.

Perhaps we are approaching the level where dividend return will become more important to long-term employee investors than the short-term price.

BOB BRUNNER  
Atherton, California

## Culturally mis-speaking

There was a mistranslation in the January-February 1992 article called "Culturally speaking." John Toppe's question, "Eres flojo" was translated "Are you ugly?" The correct translation should have been "Are you lazy?" since "flojo" means "lazy, loose" in Spanish and "feo" means "ugly."

ELISA ESKENAZI  
Los Angeles, California

## I'm convinced

The November-December 1991 *Measure* had a very interesting article called "Biblio-file," telling how a corporate library might be useful.

Fine; I'm convinced. But how may we use it efficiently from a distant country?

MICHEL DEVAUZE  
Evry, France

*Eugenie Prime, HP Labs Research Library manager; encourages HP sites in Europe without libraries to contact Stanley Tattersall, the manager of the Bristol (England) Labs library on HPDesk. Employees also may contact the HP Labs Research Library in Palo Alto, California. Send notes to Research.Library on HPDesk or to Research.Library%1900hplabs.hp.com on Unix.—Editor*

## Full-court press

In the January-February 1992 issue John Young mentioned that he has the difficult challenge of balancing praise and prodding, and I'm sure it is difficult.

The comment brought back an image from my high school days at basketball practice: I'm in the middle of a full-court scrimmage and we have a full-court press on. I've run up and down the court three or four times in rapid succession and, as I approach mid-court, I start to slow down a little to give my legs and lungs a break. All of a sudden I hear the coach yelling at me from the sideline, "RUN, JIM, RUN!" I wish he would disappear! Can't he see what I've already done? Why is he picking on me?

Of course, later I realized that he was doing what was best for the team and, in

fact, what was best for me. He saw me slow down. He paid me the compliment of assuming—of knowing—that I could do more. He wasn't criticizing what I had already done, he was just focused on doing the best that we could do.

As I look back over my considerable number of years at HP, I wish I had been prodded more. I could have done more. So my feeling is that if we want to win this economic ball game we are in, those of us who are "coaches" had better do more positive prodding ("Come on, Jim; more, faster. I know you can do it!"), and those of us who are "players" had better get serious and start "running harder" and think about how good we are going to feel each time our team wins.

JIM KOCH  
Aguadilla, Puerto Rico

## Please send mail

Do you have comments about something you've read in *Measure*? Send us your thoughts. If we publish your letter, you'll receive a free *Measure* T-shirt (one size fits all).

Address HP Desk letters to Jay Coleman; by company mail to Jay Coleman, Building 20/BR, Palo Alto. Via regular postal service the address is *Measure*, P.O. Box 10301, Palo Alto, CA 94304-1181 USA. Please limit your letter to about 150 words, sign your name and give your location. We reserve the right to edit letters.



Whether you're in Cairo (above) or the Congo, employees in HP's International Sales Branch learn that flexibility is the key.

# It's another world

By Teresa Hoefert

**What has 75 countries, 60 currencies and is one of the most volatile parts of the world? HP's International Sales Branch.**

Seppo Laube-Pohto was on his way to review an HP distributorship in the Congo not long ago when he found himself in the middle of a near riot.

Seppo, then commercial computer sales manager for HP's International Sales Branch (ISB), was standing at the port in Kinshasa, Zaire, waiting for the boat to cross the Congo River to Brazzaville, Congo.

Confusion reigned. Screaming people ran back and forth. When the police arrived, five men—each holding a huge garbage bag—suddenly dived into the river. Instead of continuing the pursuit, the police stood at the edge of the river and hurled insults.

In the meantime, the boat Seppo was on departed as scheduled. The five men with the bags—still floating offshore—grabbed onto the boat as it passed by and hung on for their lives.

Seppo soon discovered the contents of the floating bags: chickens. Because of the Congo's strict centralized economy, smuggling goods in from wealthier neighboring countries is a common occurrence.

Once the smugglers reached the boat, they were without worries. Upon their return to Kinshasa, there was no fear of arrest because the evidence would have disappeared.

It's just another day in the region comprising HP's International Sales Branch—one of the most volatile, com-

plex and diverse parts of the world. The territory spans 75 countries—including all of Africa, the Middle East and the Gulf States—and consists of both the poorest and wealthiest of people.

What makes this region so different, and how does HP handle business amid such diversity?

It's difficult to imagine doing business in a region that has 60 currencies, as many legal systems, fundamental religious differences (even within a single

**ISB employees measure distance in airplane hours, not kilometers or miles.**

religion) and diverse political systems—few of which are democracies.

Flexibility is a key word. HP employees learn to measure distance in airplane hours instead of kilometers or miles, and never to let themselves be restricted by time when doing business.

If you're in Mali, you know not to leave before the third cup of tea or you'll cause great offense to your host. During Ramadan—when Arabs abstain from food, drink and smoke from sunrise to sundown—you know it's not wise to invite your client to lunch or out for a drink.

Negotiating an agreement changes from the "business-is-business" attitude in Europe and the United States. Different cultures mean that you must consider different values. This plays a crucial role in negotiating deals. For example, trust and confidence-building make business happen. Often you don't actually agree to a sale—rather, you agree to supply more material or to go to another meeting.



MICHEL BLANC

**Seppo Laube-Pohto, an ISB sales manager, passes through the Geneva, Switzerland, airport on his way to another sales call.**

Saving face—making sure the other person looks good in front of his peers—is extremely important. This often involves some kind of gift. The idea of exchanging presents as part of doing business has no negative connotations in many parts of the world as it does in Western society.

HP stays clear of these complications and follows a strict code of ethics, says Arnold Fuller, ISB general manager. "Trade discounts are one of the few areas that we can pursue safely."

Yves de Preville, PCs and peripherals manager for the Middle East, spent 30 minutes one day negotiating a discount with a customer who had not yet asked the price of the product.

In 1987, Arnold took over management of the ISB—then known as the Middle East and Africa (MEA) Area. Since then, Portugal, Greece and Turkey have been converted to wholly owned subsidiaries and no longer are part of the ISB. Saudi Arabia, South Africa

and Israel are covered by distributors.

Why the name change to ISB?

"It was getting in the way of doing business," Arnold says. "The geographical presentation provoked so many questions because there was always somebody who didn't want to be associated with somebody else in the region."

There also was the difficulty of name badges. In the Geneva, Switzerland, headquarters of the European Multi-country Region, people wore MEA badges; once they were in the territory, they wore plain Hewlett-Packard badges to avoid conflicting political discussion.

MEA had 140 employees and a sales volume of \$45 million in 1988. Today, there are 119 employees, and ISB's sales have increased to \$125 million.

Explains a colleague, "We've been fairly conservative since Arnold arrived. Arnold started by asking a lot of questions about what was being done and why it was done that way."

The answers translated into a new vision at ISB: to meet HP objectives in a challenging multicultural environment

**Trying to apply HP's citizenship objective in Africa and the Middle East is nearly impossible.**

and to maximize market penetration at optimum cost, superior business alliances must be cultivated to make HP products the preferred choice.

Doing business in the International Sales Branch means that you have to be on your toes at all times. Most HP business worldwide is done in democratic



**General Manager Arnold Fuller (left) greets a customer outside the ISB headquarters office in Geneva. ISB sales have grown from \$45 million to \$125 million annually since 1988.**



**Prince Mahmoud Al Maktoum (center) from the United Arab Emirates tours the "Made in the USA" exhibition in Dubai, Oman, in 1991 with HP distributor Steve Jensen.**

countries. That's not the case in the ISB.

For example, trying to apply HP's citizenship objective in most of Africa and the Middle East is nearly impossible, given the enormous differences in cultural values. ISB's answer is to let the local populations—those who best know the rules of their society—do business while HP supplies the products and the product knowledge. This is why the present strategy aims at increasing the effectiveness of distributors in the territory.

Out of the 75 countries in the territory, HP has 49 distributorships. Thirty are full-function distributorships (FFD) meaning that they are completely independent, own the entire sales process and are responsible for support. HP provides product knowledge.

The remaining 19 relationships are limited-function distributorships. They own the sales process, and HP provides more services than with an FFD.

HP has a rigorous process to select distributors. The company assesses potential distributors based on their competency and compatibility, including their financial business ethics, product-marketing knowledge and high-technology expertise.

Once HP chooses a distributor, it establishes a formal business alliance. HP does, however, maintain the right to control the business in licensing matters. The company relies on distributors to tell HP the end user and end use of the products they sell.

Licensing laws and boycott regulations pose some complicated problems for the ISB. A keen awareness of the United States' political relationships is a must. Since 1976, restrictive trade practices have been enforced in the region. Complications arise when there are components of different origins contained in one single HP product. When an Arab finds a part made in Israel, he

usually sends a letter of complaint to the ISB. The ISB acknowledges receipt of the letter and reports the complaint to the boycott authorities in the United States. In fact, all the mail coming from the Middle East into the ISB is screened by a licensing group made up of four people who check for boycott clauses.

ISB territory encompasses three areas: the Maghreb, the Middle East and Israel, and the rest of Africa, including South Africa.

HP has a small local business selling personal computers in sub-Saharan Africa, where many of the countries are on the World Bank's "least-advanced-countries" list. However, most business is done with other multinational companies, such as Shell and Unilever, which already are established there.

This area contrasts dramatically with the oil-rich Gulf countries, where a customer may fly into Geneva for the day, arrive at the ISB office and leave a taxi



or chauffeur waiting while he conducts business.

Regional conflicts are almost status quo, but the recent confrontations with Saddam Hussein of Iraq in the Middle East attest to the region's volatility. Restrictive trade practices often need to be implemented swiftly. In spite of these measures, business in the rest of the region must continue.

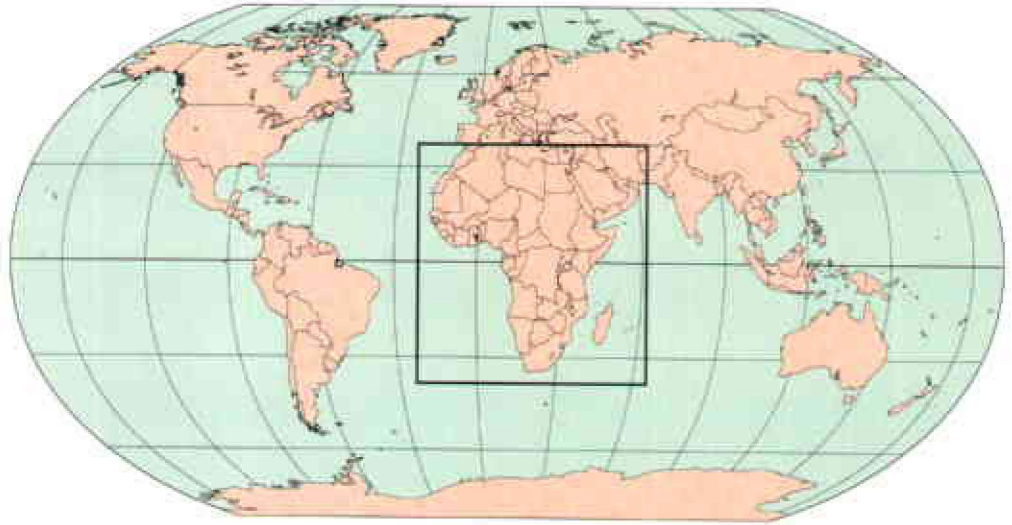
Prior to the 1991 land war, the United States Army, anticipating its casualty list, ordered 78 HP monitors at a cost of \$1 million for hospital operating rooms—delivery as soon as possible. The call was made to Geneva and—within one week and through a large effort by all—the monitors were paid for and delivered to the Army base in Stuttgart, Germany.

One of the largest HP deals in the region was a sale to Etisalat, a Postal, Telegraph and Telephone (PTT) company in the United Arab Emirates. (PTT is a government authority or agency that

**Most business is done with multinational companies, such as Shell and Unilever.**

typically operates the public telecommunications network.)

Since 1983, HP has been supplying systems such as the HP 3000 to the PTT. This multi-million-dollar deal is an



**The box shows the immense area in which the 75 ISB countries are located.**

example of long-term loyalty to HP and a growing relationship with the company's distributor there.

Recently, HP signed a deal in Israel for a cellular telephone-billing system through Motorola, the distributor there. In spite of fierce competition with IBM for the deal, HP's strong position in the region will enable Motorola to develop a billing system on HP open systems.

How does the ISB compare with HP's Intercontinental Operations—another region that encompasses a huge geographical area? While Intercon also has some politically unstable countries, ISB territory includes what might be termed the jugular vein of international politics.

There is a volatility in this region that's unlike any other part of the world. While the economies of the ISB countries vary from the poorest to the wealthiest, there is no middle-power

strength comparable to Australia or Canada, or the newly industrialized countries, as there is in Intercon.

Above all, the cultural and political diversity makes doing business in the ISB unlike any other HP territory. ■

*(Teresa Hoefert has been an intern the past two summers in HPSA Public Affairs in Geneva, Switzerland. —Editor)*

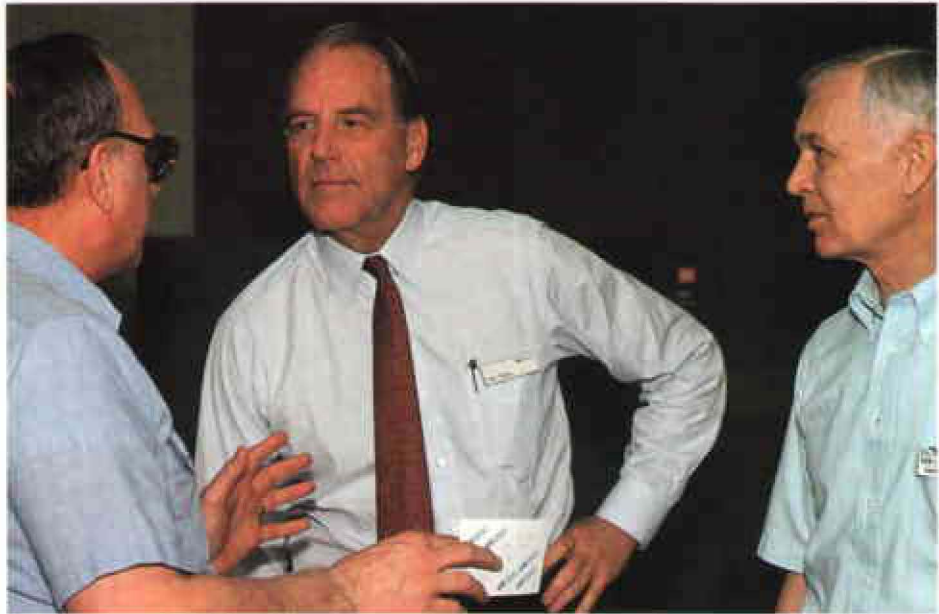
## HP's president and CEO reports on the company's "purpose statement" and HP's directions for the '90s.

I'd like to use this issue of *Measure* to discuss the work that members of the Management Council and I did this past year on articulating HP's direction in the '90s. While we have chosen to organize the company in a way that recognizes the differences among our various businesses, we still need a common view of HP's purpose, the environment in which we'll operate and how we can capitalize on the opportunities ahead.

We didn't want that view to constrain the imagination and entrepreneurship that have driven HP's success. However, many people at HP have expressed the desire for something in between our corporate objectives and the product strategies of the operating groups. This seemed like a good time to tackle that challenge.

We began our exploration of the future by reaffirming some basic HP values: trust and respect for the individual; focusing on a high level of achievement and contribution; and conducting our business with integrity, teamwork, flexibility and innovation. These are the things that make us want to work at HP. I mention this part of our process so you know that the purpose statement we developed is firmly rooted in our traditional values.

Succinctly stated, HP's purpose is this: **to create information products that accelerate the advancement**



Kermit Schaller (left) and Darrell Einfalt (right) talk with John during a February visit to the Fort Collins, Colorado, site.

**of knowledge and fundamentally improve the effectiveness of people and organizations.** Each of the phrases carries its own meaning.

- **Create** means that we make a contribution in our fields of interest; we're not a clone company.
- **Information products** encompass the broad range of HP equipment—measurement, computation, communication—and service and support.
- **The advancement of knowledge** means that we extend people's ability to understand their world.
- **To fundamentally improve** means that what we do makes a real and positive difference in our customers' lives. This phrase also implies that we work to have a thorough understanding of customers' needs.
- **The effectiveness of people and organizations** means that we aim to improve how people live and work. Our focus is on work, but the benefits we provide go beyond the workplace to encompass the environment, health and

the home.

This purpose statement summarizes why HP exists and what the world would lose if we were no longer in business. It doesn't necessarily differentiate

*This purpose statement summarizes why HP exists.*

HP from our competitors; that comes in the strategies we choose to fulfill our purpose.

Once we completed this statement, we turned our attention to the future. And since our purpose directly relates to information products, we thought it appropriate to devote our attention to how the information environment will evolve.

The information environment will see more changes in the next 10 years than in the past two or three decades. Here's how we see what lies ahead:

There will be **continued price/performance improvement** for electronic products and **a solution to the software-generation problem** that has limited the usefulness of electronic products.

As information-handling capabilities are increasingly embedded in a wide range of products, there will be **a blurring of the boundaries between "electronic" and "non-electronic" products.**

Similarly, there will be **a blurring of the distinction between instruments and computers, and between "professional" and "consumer" electronics.** The consumer category

---

*The information environment will see more changes in the next 10 years than in the past two or three decades.*

often will represent state-of-the-art technology.

As the telecommunications industry moves toward digital technology, there will be **a convergence of datacom and telecom**—with the same network carrying voice, data, text and images. Entertainment providers also will use this network. **This "information utility" will be stacked with resources**—everything from "smart" Yellow Pages to on-line encyclopedias, and hundreds of other possibilities. Wireless communications will enable people to **access information anytime, anywhere.**

We will see **the development of a broad range of "information appliances"** that plug into the information utility. The world "appliance" denotes

something that is used as a means to an end, rather than an end in itself. This is a change from the past, when the complexity of technology has forced people to focus on the tools they use rather than the task they wish to perform. An information appliance will be used intuitively and will adapt itself to the user. It will remove the tedium of work and be considered indispensable.

With this shared view of the future, we then reviewed the possibility of a "mission" or goal for IIP. We decided that while this step can be useful for a business unit, it's not appropriate to try summarizing a goal for the *entire* company in a single, bumper-sticker battle cry. Instead, we worked to characterize the general ways IIP might participate in the information environment ahead, and particularly to see how we can leverage our strengths across the company.

First, we can provide the tools to help advance and manage the information utility. T&M will play a major role here, and HP components will be important building blocks. HP computers will be used to offer enhanced services on the network, and we have a terrific opportunity to address the growing problem of network management by combining HP

---

*You are the people who will continue to provide the spark of innovative ideas...*

OpenView software with IIP's measurement expertise.

Second, we can provide a wide range of information appliances based on HP's strengths in measurement, computation and communication.

I want to emphasize that senior management doesn't intend to identify all

the kinds of appliances or other specific products HP should make. Those decisions belong in the operating entities. You are the people who will continue to provide the spark of innovative ideas that have fueled HP for more than 50 years.

The '90s also are sure to see plenty of action in the high-growth segments of the information-technology industry that we've been addressing for some time: open systems and the revolution on the desktop. We've demonstrated we can make a real contribution in these areas, and we'll continue to do so. We'll continue activities in attractive markets where measurement capability is key, such as health care, environmental and biotech.

You'll be hearing more about HP's direction for the '90s in *Measure* and from your local management in the months ahead. For now, I'd like you to keep in mind that there are vast opportunities for us, and that HP is superbly positioned to capitalize on them.

I believe the '90s can be **the HP decade**—one that fills us with pride and rewards us all in meaningful ways.

---



**News from around the HP world**



GARY MATOSO

**A cardiac-ultrasound unit given by HP is used in a St. Petersburg children's hospital to diagnose young patients.**

**Heart to heart**

HP medical gear is part of a humanitarian effort in the former Soviet Union to save the lives of youngsters born with heart disease.

This February a volunteer team of 55 Northern California doctors, nurses and other medical people spent two weeks at the St. Petersburg (formerly Leningrad) Children's Hospital No. 1.

They screened hundreds of children with life-threatening heart defects, and operated on a dozen or so of the most severely ill. Anxious parents, hoping for help for their children, filled the hospital hallways.

This was the seventh such trip since 1989 arranged by Heart to Heart, International

Children's Medical Alliance, based in Oakland, California. Many volunteers come from Oakland Children's Hospital.

For the long term, the visiting medical team trains local doctors to perform complex surgical operations on babies and young children. Heart to Heart is setting up a model teaching center in St. Petersburg.

HP's Medical Products Group has given the Russian hospital a cardiac-ultrasound unit and four patient monitors. HP also loaned interpretive EKG machines for four Heart to Heart trips to help doctors measure accurately the problems of those many troubled little hearts.



**At a high school in Moscow, Russia, HP's John White talks with students in a pilot Junior Achievement company.**

**Lessons in free enterprise**

When John White, facilities-engineering manager at the Boise site, was chosen to represent Idaho in a Junior Achievement (JA) delegation going to the U.S.S.R., he didn't know that he'd bump right into an historic political shakeup.

The group of 100 students and adult supporters of JA—a program of economic education for young people—arrived the first week in December 1991 for a conference and formal acceptance of JA into the U.S.S.R. One U.S. delegate was Ray Deméré, retired HP executive and a former national JA director. The group had been given a sendoff at the White House.

One early conference speaker was Boris Yeltsin, leader of the Russian Republic. However, Mikhail Gorbachev, then president of the U.S.S.R., failed to keep his scheduled date at the group's banquet on December 8 in the Kremlin—and within a few days it was clear a major shift of power was under way.

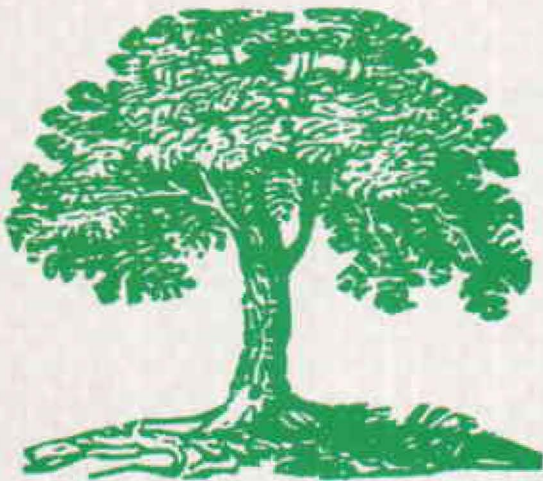
But the winds of political change which blew apart the U.S.S.R. have not chilled the welcome for JA.

John, who is a state vice president of JA, met with students in both St. Petersburg and Moscow.

A pilot program began last year in Moscow's High School 1202, where JA's Applied Economics course was taught. John helped introduce a game that uses computer simulation to teach business budgeting.

The students already had formed a JA company to sell homemade biscuits, competing successfully with the school cafeteria which provided them free. The secret: fresher products with no waiting in line.

The young entrepreneurs already had learned another lesson. When John asked if he could have their JA company button as a souvenir, they smiled and said, "No, but we'll sell you one!"—*Betty Gerard*



## A tree-mendous deal

HP computers are now assisting in the management of Polish forest resources. The State Forest Administration of Poland has selected Hewlett-Packard Polska and Austrian Systems Integrator SDS to supply a nationwide information system valued at more than \$14 million.

More than 515 HP 9000 workstations, client/server computers and high-end minicomputers will be linked to an open-systems network to manage the

67,000 square kilometers of forest that cover nearly one third of Polish territory.

The systems will be used to help assess forest and land values, control inventories, manage research, sales and administration and prevent environmental damages caused by animals, fires and industry. Hewlett-Packard Polska, HP's first wholly owned subsidiary in Eastern Europe, was formed in March 1991.

## Quoteworthy

“In my wildest dreams I didn't think it would be this good. They pulled everything together and did everything well.”

*Timothy McCollum, Dean Witter Reynolds analyst, commenting on HP's first-quarter results, as quoted in the February 20, 1992 Wall Street Journal*

“HP is going to be giving Sun, DEC and IBM a tough time in 1992. It has filled in every notch in the market and is the performance leader in all of them.”

“*Laura Segervall, Dataquest analyst, commenting on the HP Apollo 9000 Model 705 workstation, as quoted in the January 4, 1992 edition of the San Jose Mercury News*



“...every nook and cranny is now permeated with sand,” says Tony Amos, but his HP 75C portable computer keeps working.

## Adios, old faithful

For the last 14 years, Tony Amos of the University of Texas Marine Science Institute has surveyed a stretch of beach along the Texas coast. In addition to counting the numbers of sea birds, Tony records people, beach widths, sea conditions and marine litter.

At first, he used a clipboard. “Then, in 1984, I saw the HP 75C portable computer,” says Tony. “It could be programmed in BASIC, was small enough to fit into a big pocket, had a full keyboard, a printer and a tiny digital tape recorder. I knew I must have one. With the HP 75C, I could record a bird species seen on the beach with a single keystroke.

“I don't want to get gushy over a computer, but the say-

ing, ‘They don't make ‘em like that anymore!’ seems to apply,” Tony says. He estimates that his HP 75C has recorded 2,000 separate beach observations, as well as data from two Antarctic voyages.

Tony says, “It has gotten wet innumerable times and every nook and cranny is now permeated with sand. I once left it on the roof of my truck as I drove off in the rain. When I found it in the gutter later, it was still functioning.” A few weeks ago, he got a new computer, but he says, “I can still use ‘old faithful’ if the new one fails.” (Note: The HP 75C is no longer available.)

STEVIE CASTILLO



Yokogawa historian Elju Matsumoto and an associate view HP historical products with HP archivist Karen Lewis.

## HP on display

The Yokogawa Technology Museum, scheduled to open in 1995, is already garnering international interest. The museum, a project undertaken by Yokogawa Electric Corporation, HP's joint-venture partner in Yokogawa-Hewlett-Packard, will display the history of the evolution of measurement and control technology around the world.

Currently, an exhibit in the main lobby of Yokogawa Electric Corporation gives visitors a preview of what

the museum will hold.

HP's early measurement instruments showcased in the exhibit are on loan from the HP Archives' historical-instrument collection in Palo Alto, California.

Also on display is a plaque that features pictures of Bill Hewlett and Dave Packard, and acknowledges the company's contribution to the creation of modern electronic measurement techniques throughout the world.

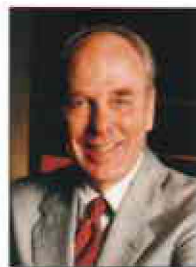
## BOARD OF DIRECTORS

Standing for election to the Board of Directors for the first time in February was



**Condoleezza Rice**, associate professor of political science at Stanford University, and former Special Assistant to the President of the U.S. and Senior Director for Soviet Affairs, National Security Council.

Shareholders also voted for the first time



on **Thomas E. Everhart**, president of California Institute of Technology, who was elected a company director in July 1991 by action of the board.

The full slate of 16 directors, including Drs. Rice and Everhart, was approved by shareholders.

The Board of Directors increased the FY92 second-quarter dividend on the company's common stock from 12½ cents per share to 20 cents per share.

## T&M CHANGES

To take advantage of new growth opportunities, the Test and Measurement Organization has formed a new business unit for automatic test equipment (ATE), among other changes.

**John Scruggs** is general manager of the new ATE Business Unit within the Electronic Instruments Group (EIG). **Jack Trautman** replaces him as Manufacturing Test Division G.M.

The Communications Test Business Unit under G.M. **Byron Anderson** has been given independent status and now reports directly to V.P. **Ned Barnholt**.

The Kobe (Japan) Instrument Division transfers from EIG to the Microwave and Communications Group (MCG). Within MCG, **Scott Wright** will become G.M., Network Measurements Division when **Bill Wurst** retires April 30.



Co-founder Bill Hewlett notes that the HP 35 scientific pocket calculator originally was projected to sell 1,000 units a month, but sales exceeded 300,000 in three years.

## Happy birthday, HP 35

HP celebrated 20 years of progress in handheld-calculating technology, hosting a birthday party at the Las Vegas, Nevada, Consumer Electronics Show for the HP 35, the first scientific pocket calculator.

The HP 35 not only obsoleted the engineer's slide rule, it revolutionized calculator design. It was small enough to fit into a shirt pocket and capable of performing trigonometric, logarithmic and exponential functions.

It was one of the first products that involved early

and outstanding working relationships between Corporate entities such as the lab, industrial design, manufacturing and tooling. Development time was quick and intense—February to September 1971.

Although originally projected to sell 1,000 units per month, this nine-ounce product, which became one of the most successful products in HP's history, had sales exceeding 300,000 units in three years.

## NEW HATS, ENTITY NAMES

Within Worldwide Customer Support Operations: **Mark Solle** succeeds the late **Marc Hoff** as G.M., Software Technology Division; **Klaus-Dieter Klein** to manager, Worldwide Response Centers.

Within the Ink-Jet Products Group, **Rich Raimondi** to operations manager, Barcelona Peripherals Operations in Spain... The former San Diego Color Imaging Division is now the San Diego Printer Division.

In the Mass Storage Group, the Disk Mechanisms Division has been renamed the Disk Memory Division.

## GETTING TOGETHER

Hewlett-Packard and Novell Inc. announced a strategic relationship under which Novell will develop its NetWare networking operating system for PA-RISC, and HP will distribute Netware worldwide.

HP and Prime Computer, Inc. announced a multi-year strategic alliance involving resale of HP's PA-RISC business servers and workstations worldwide by a Prime unit, and porting Prime database management software to HP business servers.

## NEW PRODUCTS

The **HP Apollo 9000 Model 705 and Model 710** from the Workstation Business Unit are the fastest low-end workstations in the industry.

From the Optoelectronics Division: the **HLMA series of ultrabright amber and reddish-orange LEDs** visible outdoors in sunlight, due to new HP AllnGaP technology.

The Colorado Springs Division's new **HP 54720A 4-GSA/s, 8-bit modular oscilloscope** gives the digital-systems designer the most accurate means of getting at intermittent design problems... The new **HP 71603B Gbit bit-error-rate test set** provides telecom-equipment makers with thorough characterization of waveform distortion and transmission quality of devices. From Queensferry Telecom Division.

The **20-MHz Intel386/20 PC** from the Personal Information Products Group computes faster than competitive systems and can be expanded easily. The Mechanical Design Division's **HP Precision Engineering/Solid-Designer software** for 3D modeling is the fastest such CAD system available.

**PARTING SHOT**



 **HEWLETT  
PACKARD**

*Measure* Magazine  
PO Box 10301  
Palo Alto, CA 94304-1181

Bulk Rate  
U.S. Postage  
Paid  
Hewlett-Packard  
Company