



FOR THE PEOPLE
OF HEWLETT-PACKARD
IN CUPERTINO

INSIGHT

SEPTEMBER
OCTOBER
1988

**HP's CCE: Freeing the
power of computing**

ALL NEW!
The first in a series
of great issues for HP people
in Cupertino.

*HP is creating
a cooperative
computing
environment:*

CCE

*It will
free the power
of computing
for everyone*

**What if... all the world's
knowledge was available for the
asking?**

Doctors' diagnoses could be readily linked to their colleagues' findings around the world. Shopping for the best deals from a worldwide array of products could be done at home from the window of your TV screen. You could receive up-to-date information on any topic — in electronically transmitted forms of print, video or audio, such as excerpts from books, TV news reports, newspaper articles, even items from video encyclopedias.

**What if... computers were so
easy to use, everyone could readily
access this flow of information?**

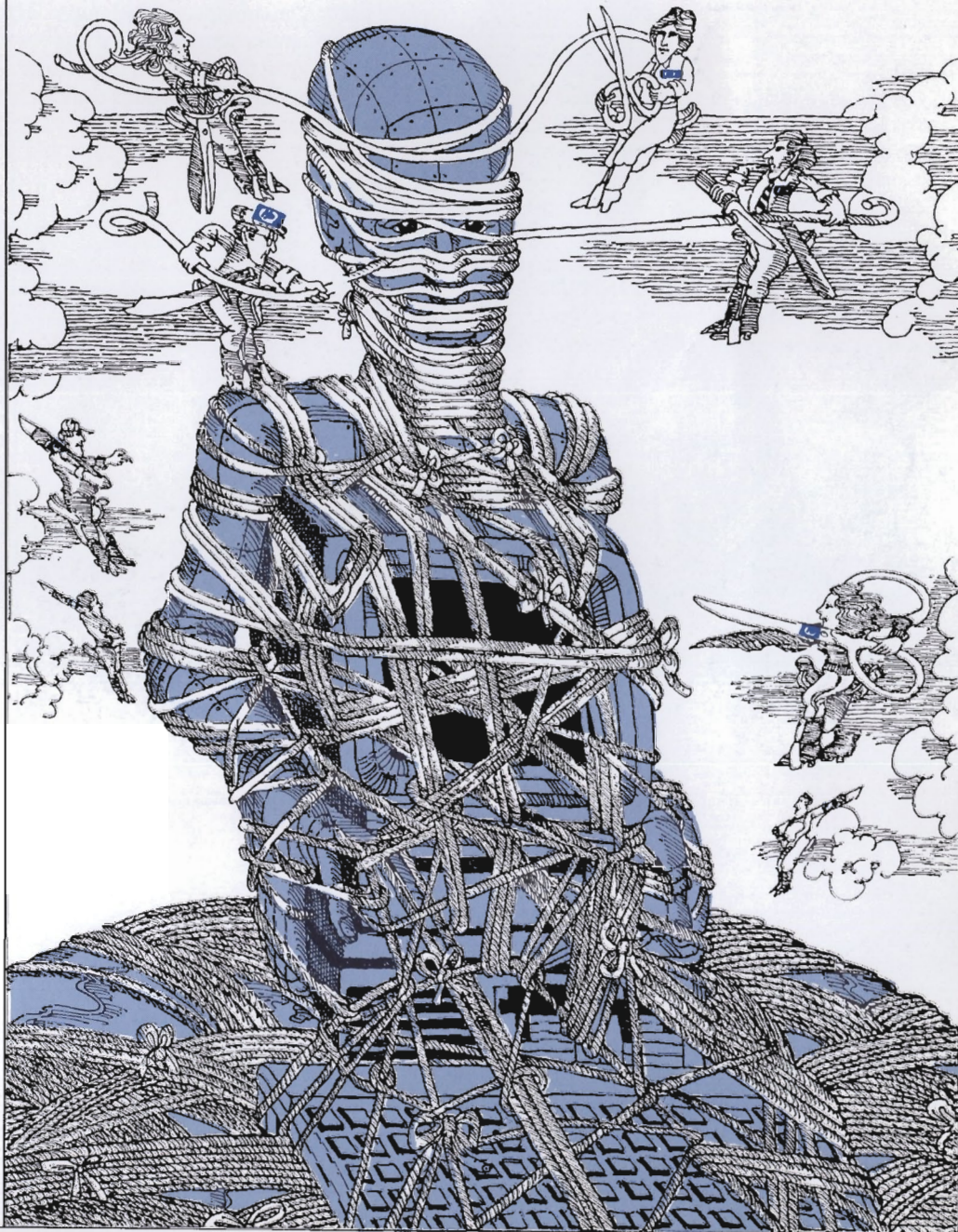
Environmental experts would be better able to understand the effects of pollution on the world's weather. Medical researchers would be able to test their theories for curing diseases, such as cancer or AIDS, by sorting through the world's medical records. Industries like banking and publishing would be revolutionized. You could instantly send a message to anyone in the world.

**What if... we couldn't imagine
life without computers?**

Everyone, from children to grandmothers, would use computers daily. No one would be afraid of them.

These are the kinds of 'what if...' questions HP Vice President **Joel Birnbaum** has been asking for some time. Now Joel, and the new HP entity he leads, the Information Architecture Group (IAG), will address those questions by spearheading the company's efforts to chart the future course of HP computers. That course is called CCE — the Cooperative Computing Environment.

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CCE (continued)

What would a cooperative computing environment be like? The CCE vision is a network of computers that would perform in two key ways:

First, work done on one computer could be combined with work done on others, regardless of manufacturer, location or operating system, so that the machines could perform together to solve a single problem.

Second, the computers would be extremely easy to use. Even people most fearful of technology would find these systems a snap.

Anyone who uses HPDesk knows it's possible to share information over a network, so how, you're probably asking, is CCE different from what we have today?

In fact, it's not. The notion of a distributed computing environment — several computers working on a network — has been practiced for the last ten years or so. "This is not a new idea," says Joel. "It's a question of degree. This is an evolutionary process. We're looking to solve the problem in a more thorough way."

A host of benefits

A more thorough solution for making different types of computers work cooperatively would bring a host of benefits to customers.

It would mean customers could choose the best components available from any manufacturer. It would allow them to replace particular components without replacing their entire systems so that customers could grow their systems modularly. Work groups in different locations could work together more easily. Expensive

peripherals — such as high-end printers — could be shared by more people. CCE would give each user on the network wider access to information and computing power. And, if several small, inexpensive computers could be coordinated to work in parallel to do the work of one large, costly machine, the cost of computing power for customers could be reduced.

What are the challenges of bringing about CCE? An important one has to do with how computers share information, a problem called "interoperability."

"We've done a pretty good job at connectivity," says **Michael Mahon**, who works in IAG's System Design and Architecture Section. "That means allowing computers to share bits of information. Call it a physical connection. What's missing is a logical connection — interoperability. It's the notion that the bits computers pass back and forth will be in a form each computer can understand."

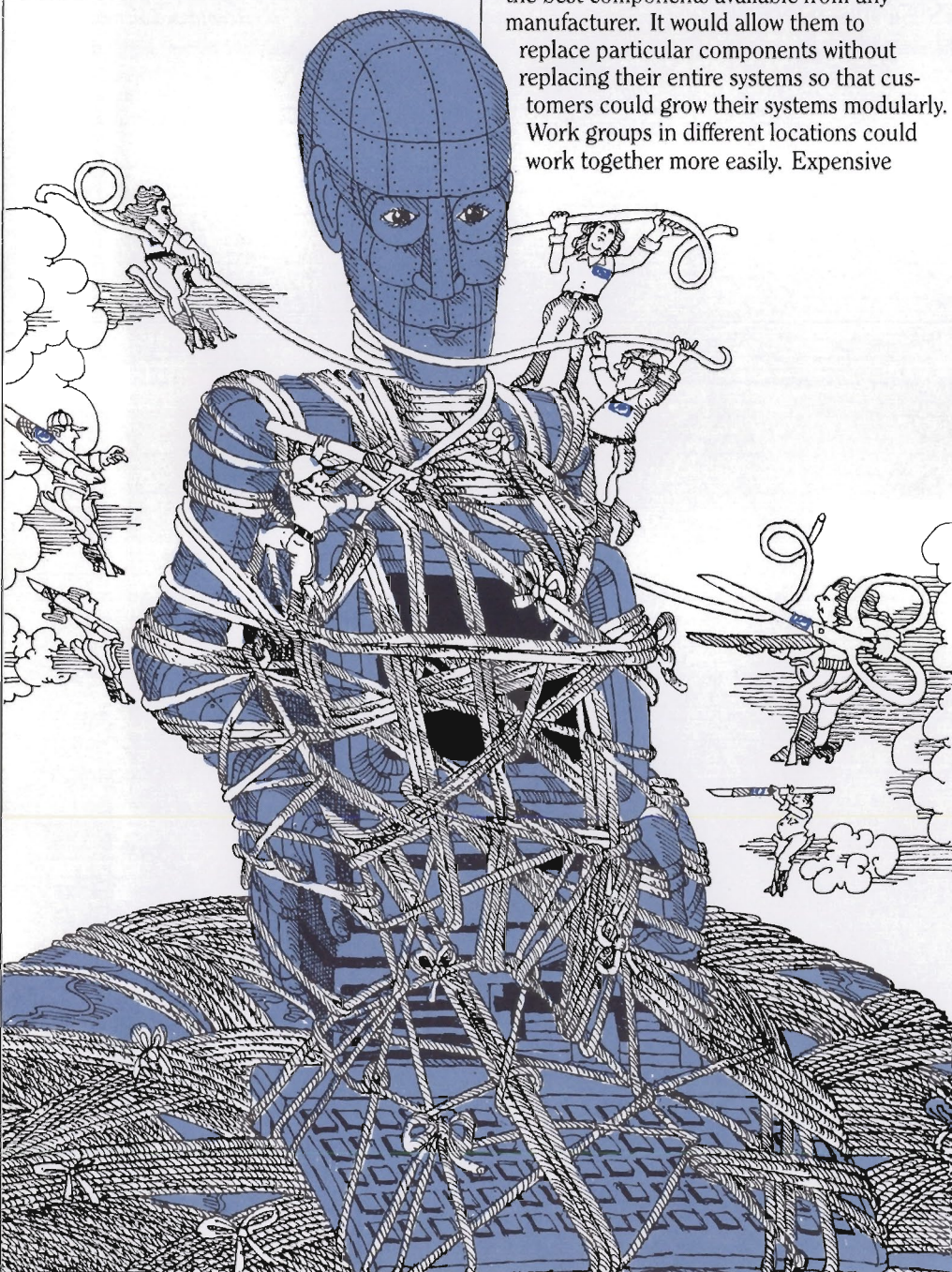
Connectivity — that physical connection — could be likened to two people entering a room together. They share the same physical space, but if they don't speak the same language — if they don't connect logically — they won't be able to work cooperatively. Today, most information sent from one computer to another does not arrive in a form that can be easily manipulated by the computer on the receiving end.

It's got to be easy

Another key challenge to realizing a cooperative computing environment is achieving ease of use.

Think about it: How many times have you been frustrated because you couldn't figure out how to make your computer do what you needed it to? People prefer to focus on the task, rather than the way to get it done. For computers to be truly useful, they must be easy to use. This means having a consistent user interface, so that you won't have to keep relearning how to interact with a computer every time you use a different system. It means having transparent access to data where users simply have to request the data they want without worrying if it comes from machines close by, or far away or from different manufacturers. It means hiding all aspects of the computer's complexity from the user.

"The phone is a good example," says Joel. "It's a very complicated system, and yet we don't have to think about how it works at all when we use it. What's more, it's 10,000 times more complicated today than it was 20 years ago — with satellites and micro-waves and fiber optics. But we've been spared from thinking about all those changes. We use it with essentially the same interface."



HP's NewWave office environment is an important contribution for increasing ease of use. The software package, still under development, provides an accessible interface, based on Microsoft Windows 2.0, using pull-down menus and icons. NewWave allows users to access and integrate PC-based applications through its consistent interface. It also provides an easy way for users to automate routine information tasks, such as assembling and distributing quarterly reports.

For computers to hide their complexity takes a lot of computing power. So another challenge to creating a cooperative computing environment will be finding a way to hide the complexity of a networked system

while minimizing its cost, both in terms of dollars and performance. Addressing these kinds of technical challenges will occupy HP well into the next decade, Joel predicts.

Standards

But there's another kind of challenge to realizing a cooperative computing environment. It has to do not so much with how computers cooperate, as how people do. People in the computer industry need to agree upon standards.

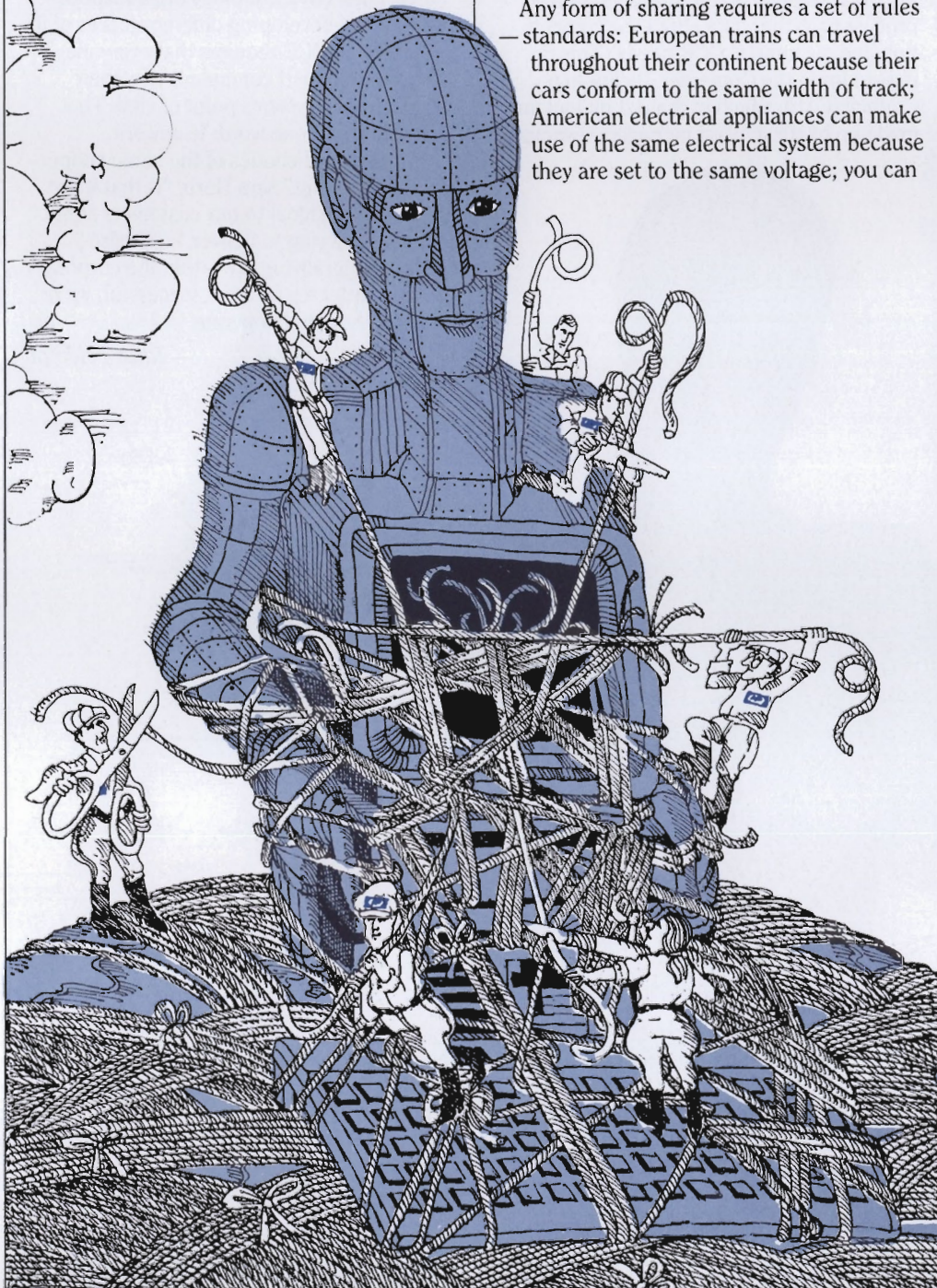
"You can't do it without standards," says Joel. "All this implies there is a set of rules by which computers are developed, networks operate, applications are written and so on."

Any form of sharing requires a set of rules — standards: European trains can travel throughout their continent because their cars conform to the same width of track; American electrical appliances can make use of the same electrical system because they are set to the same voltage; you can

share the information in this article because you read English. For computers to cooperate on a global scale requires an international set of standards. That's why HP's cooperation with other members of the computer industry to establish standards — such as our recent efforts to help form the Open Software Foundation — is an important part of our work toward achieving a cooperative computing environment.

A complete set of durable international standards may be a long way off, but when it is realized, it could usher in a new phase of computing, even beyond CCE. If we could create a worldwide, data communications infrastructure, computers would provide us with such easy access to global information

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CCE: It's Giving us a New Vocabulary

Creating a cooperative computing environment requires some special words. Here are some of the terms you will be hearing in connection with CCE.

Co-oper-a-tive Com-puting En-vi-ron-ment (CCE): Hewlett-Packard's vision of the future of computing: a network of heterogeneous computers that can work together to solve a single problem and are extremely easy to use.

Con-nec-tiv-i-ty: A limited means of communication among computers. Computers can send bits across a network, but not in a form that can be readily acted upon by the computers receiving them.

In'ter-op'er-a-bil'i-ty: A more complete means of communication among computers. The ability of unrelated computers to readily act upon information shared across a network.

Trans-par'ent ac'cess to da'ta: Users can access data without addressing where or in what form the data is on the network.

In'te-grat'ed In'for-ma'tion Arch-ite'cture (IIA): Hewlett-Packard's internal set of design rules to guide us toward achieving a cooperative computing environment. A blueprint for how the different aspects of HP systems will work together as an integrated whole.

Per-va'sive tech-nol'o-gy: A technology that is so commonly used in the daily lives of most people that it is more noticeable by its absence than its presence. For example, telephones, cars, electricity. (Computers have yet to become a truly pervasive technology. Achieving a cooperative computing environment could help make this possible.)

CCE (continued)

and communication that they could transform society. The computer could become domesticated, as Joel has described it (see sidebar article, page seven). Computers could be as pervasive a technology as phones or cars are today — easy to use and impossible to live without.

Meanwhile, in addition to working toward international standards, there is a lot we can do within HP to establish a consistent framework for computing. Many of HP's systems were not designed to work together.

"We can stop making more of the problem," says Michael. "We can begin to think of what we are doing in terms of our long-term goal and start to make things more uniform instead of, in some cases, arbitrarily non-uniform."

Creating a blueprint

HP Precision Architecture gives us a uniform framework on which to base our new computers. Now what's needed is a broader architecture, a blueprint for how the different aspects of our systems will work as an integrated whole. The principal task of IAG

will be to create this blueprint — HP's Integrated Information Architecture (IIA).

Not surprisingly, this sweeping task will require the participation of many HP groups, in addition to IAG. "I believe the only way for IAG to be successful is to work in partnership with others in HP," says **Herb Blomquist** who reports to Joel as manager of IAG's Business Planning and Program Management Section. "My staff's job will not just be one of doing, but of coordinating. The best thing we can do is ask others for help — involve them in the process."

What kind of help will IAG need and by what process will HP's Integrated Information Architecture be created?

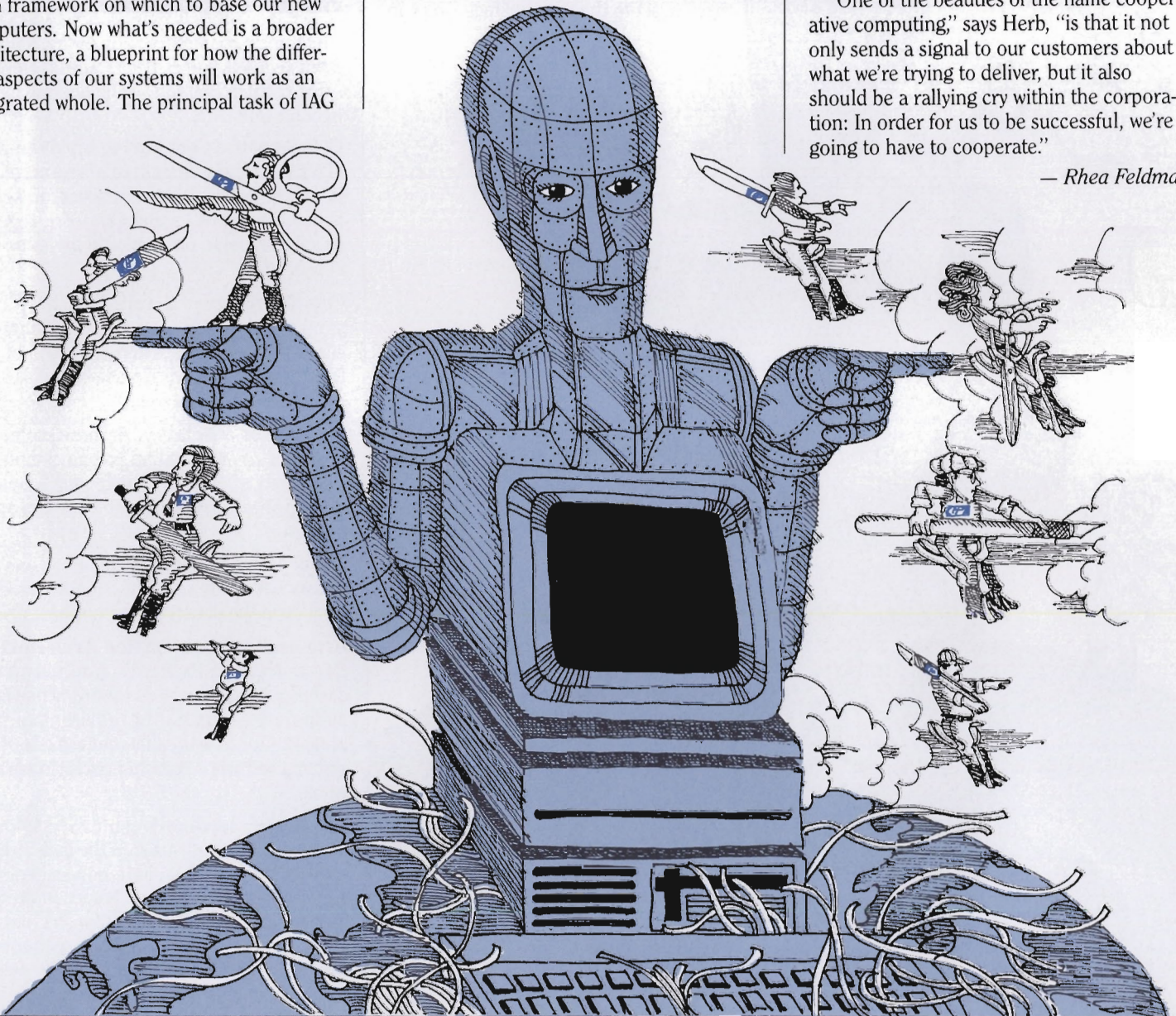
Herb's group is working with HP marketing organizations on the front end of the process to gather data about the competition and customers' CCE needs. This is passed on to the Computer Technology Council (CTC), which is chaired by Joel and made up of HP general managers responsi-

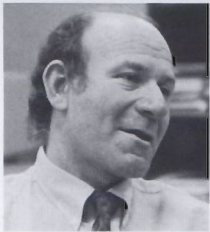
ble for the pieces of HP systems, such as systems software or peripherals. The council uses marketing information, in conjunction with technology assessments, to make strategic recommendations to the Computer Business Executive Committee (CBEC) about which technologies HP must emphasize. These decisions then will be translated into HP's Integrated Information Architecture by another part of the Information Architecture Group (IAG), **Alain Couder's** Systems Design and Architecture activity. The architecture will be verified with marketing groups to confirm it meets customer needs. Also, it will be prototyped and validated in both the IAG lab and throughout HP's research and development organizations. Then HP technology organizations will take on developing different pieces of it.

Achieving CCE requires that everyone who works on HP computers view their efforts from a systems point of view. That translates into one word: teamwork.

"One of the beauties of the name cooperative computing," says Herb, "is that it not only sends a signal to our customers about what we're trying to deliver, but it also should be a rallying cry within the corporation: In order for us to be successful, we're going to have to cooperate."

— Rhea Feldman





In 1983, Joel Birnbaum wrote an article called "Toward the Domestication of Computers." The piece represents the basis

for Birnbaum's thinking about the direction of HP's computers. A few excerpts are published here.

Toward the Domestication of Computers

"One only understands the things one tames..."

In spite of the vast numbers of computers now in use, they are still far from pervasive. Virtually all the pervasive technologies I can think of have passed through four evolutionary stages. Such technologies usually begin as an experimental rarity, a laboratory curiosity, sometimes an accidental discovery in the pursuit of basic science, but much more often they are the result of an entrepreneurial attempt to exploit a perceived opportunity. The second stage of evolution is usually that of an exotic tool or toy, often solving only a cross-section of a problem and used primarily by a narrow class of experts. In the third stage the technology evolves to the point where it is manufactured in quantity, becomes well known and commonplace, but is used directly by only a rather small portion of the population. In the fourth and final stage the technology becomes part of the fabric and infrastructure of life. Its absence is then more noticeable than its presence ... During the third stage of a new technology, there is usually a proliferation of companies seeking an early competitive edge. Product distinctions are clear although there are many lookalikes, and pricing is somewhat arbitrary. A characteristic of the fourth stage is that the businesses consolidate, major innovations are far more difficult because of large in-place investments, and prices stabilize. For example, the 1100 or so American car companies of the third stage have now become four, and prices of comparable (and very similar) models are exceedingly competitive. Personal computer technology today is in stage three, and we can confidently predict that the several hundred personal computer com-

panies vying today for a share of this rapidly expanding market will shrink to a number about 100 times smaller, and that the large dynamic range now seen in software pricing, for example, will soon reach a more rational equilibrium between cost and price.

The rate of dispersion of a particular technology is controlled by several factors. Probably the strongest force is the development of a community of common interest. For example, the automobile as a technology for personal transportation could not have achieved stage four without the public's support of the development of a highway network. Similarly, the personal computer will require the creation of extensive data networks in order to be considered seriously as an alternative to the mails or the telephone and telegraph systems, and that will require the public's conviction that such networks are worth having.

The taming of computers

The average American would as soon program a personal computer in Basic or Pascal as he would climb into a cage with a circus lion. The reason is the same: Neither the computer nor the lion is really tame; they violate the rule of general access required for true domestication, for neither a lion tamer nor a professional programmer qualifies as a paradigm of general society.

The computers' designs are optimized by engineers for cost and performance and not for natural usage by ordinary people. This means that the machines must be redesigned to be adaptive; that is, the idiosyncrasies of the user must be accommodated in a way that supports his mental abstraction of the process taking place in the machine. Our software today is rude: it does not recognize individuals.

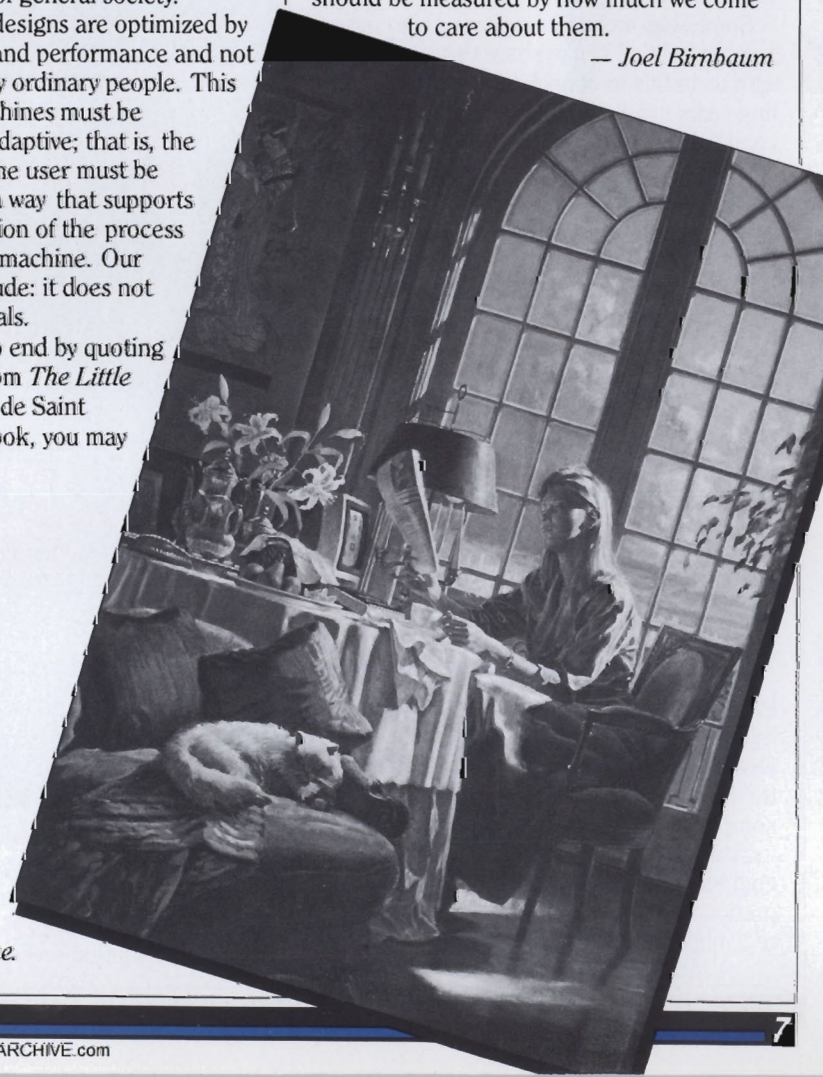
... I would like to end by quoting a short passage from *The Little Prince*, by Antoine de Saint Exupery. In that book, you may

remember, the Little Prince, in love with what he thinks is a unique flower on his tiny planet, but exasperated by her pettiness and idiosyncrasies, has wandered from asteroid to asteroid observing the strange ways of men. At last he reaches Earth where he is dismayed to learn that his flower is nothing more than a common rose and that he has wasted so much time catering to her whims. He is disconsolate when, in a vast desert, he meets a wild fox. The fox says to the Little Prince, "To me, you are still nothing more than a little boy who is just like a hundred thousand other little boys, and I have no need of you, and you, on your part, have no need of me. To you I am nothing more than a fox, like a hundred thousand other foxes, but if you tame me, then we shall need each other. To me you will be unique in all the world. To you I shall be unique in all the world. One only understands the things that one tames ..." Later, after the Little Prince has tamed the fox, they come to a sad farewell. "Goodbye," said the fox, "and now here is my secret — a very simple secret. It is only with the heart that one can see rightly. What is essential is invisible to the eye ... It is the time you have wasted for your rose that makes your rose so important."

The fox has given you my prescription for domesticating computers: our success should be measured by how much we come to care about them.

— Joel Birnbaum

This poster was done by artist Bruce Wolfe to illustrate how pervasive computers will one day become.



Less than 25 years ago, computers were just a gleam in Dave's eye

How It All Began

Our first computer, Model 2116A, was introduced in the fall of '66 at a conference in San Francisco. It was designed to automate HP's instrumentation systems.

With computers accounting for two-thirds of our revenues and inching up every year on the charts, it's hard to imagine a time when HP wasn't in the rough-and-tumble computer business.

Yet, compared to the giants, HP is a relatively new kid on the computer block with just over 20 years as a computer manufacturer under our belt.

How did we get into the business? What were our early products all about? What was this new, burgeoning part of HP like in those pioneering years?

Some seasoned HP employees who were here when it all began share the answers with us in this look backward at our fledgling years in a business that dramatically changed the shape, size and direction of our company.

Twenty-five years ago, HP was a highly respected, very successful manufacturer of test and measurement instruments. With our instrument business going great guns, why did we decide to take on computers?

Dave took the lead on computers

While **Bill Hewlett's** first love was electronic calculators, **Dave Packard** became convinced computers were the wave of the future. In 1965, he bought the assets of Data Systems Inc. (DSI), a division of Union Carbide. Included in those assets was the design of a computer. With it came four engineers who joined HP to develop the company's first computer product.

Prior to this, engineers in two HP labs in Palo Alto were researching the notion of building a computer product. A team in Dymec, an HP subsidiary that later became the Palo Alto Division, was working on a computer that would control some of our instruments. At the same time, a group of engineers in the organization that was the predecessor of HP labs outlined the design of a minicomputer. The four engineers from

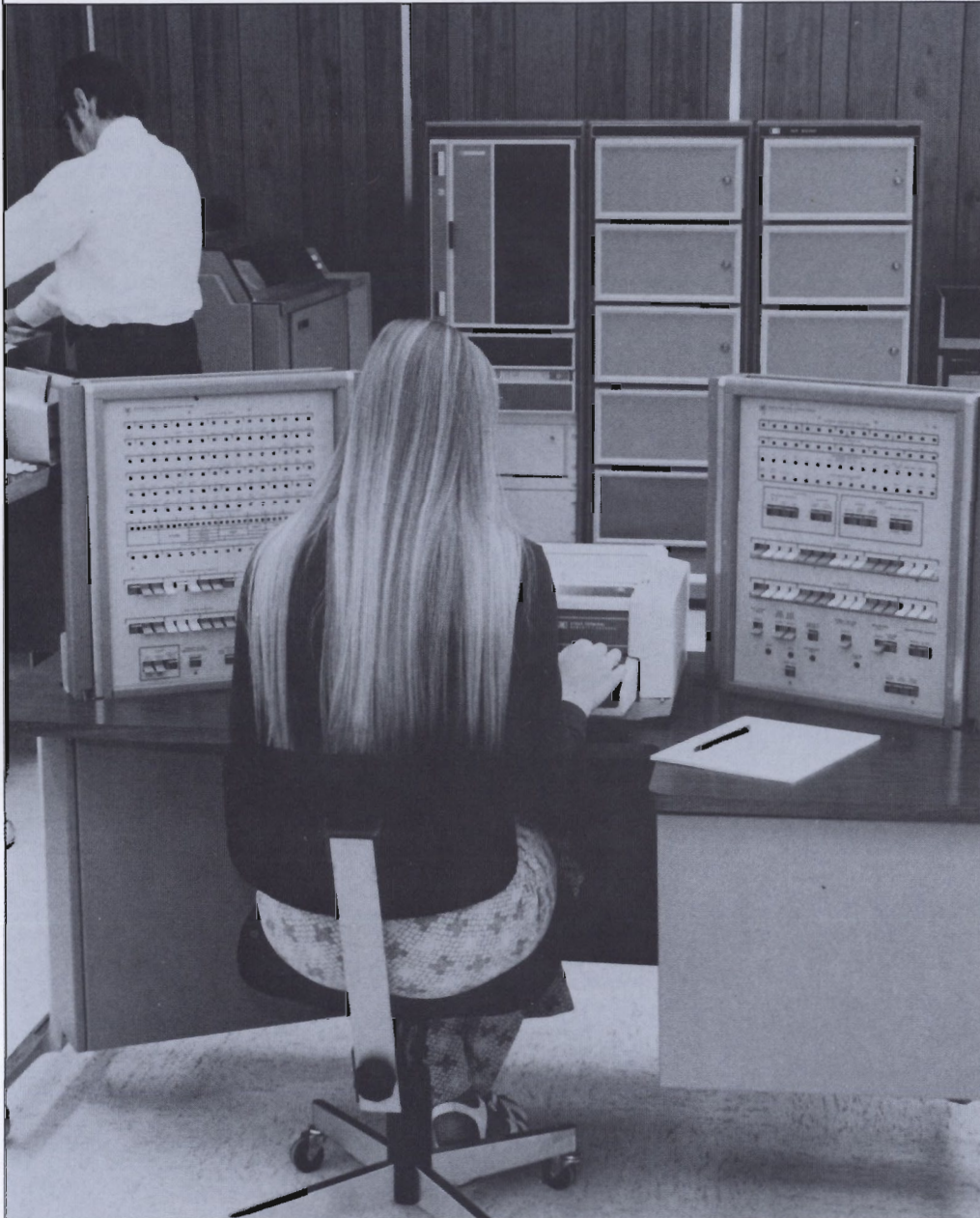


DSI joined up with the two Palo Alto groups and thus our first computer team was born.

It was headed by Computer Engineering Manager **Kay Magleby**. Members of that early team included several people still work-

ing on our site: **Ed Holland** was manager of logic systems; **Arne Bergh** worked on magnetic devices, **Jim Taraldson** was a test engineer on the project and **Willie Austin** helped design memory systems. That was in

The HP 3000, dubbed in 1973 the most complex product development ever undertaken by HP, was first introduced in 1971 then reintroduced in 1973 with a new operating system.



the summer of '65. The team soon grew to 15 in its headquarters on Page Mill Road in Palo Alto.

The machine the group was working on was a computer designed to be the "brains"

for some of HP's instrumentation systems: the 2116A. "Since HP had been strictly an instrument company," says Ed Holland, one of the two CPU logic designers on the project and now STD support engineering project

manager, "building computers was quite a change. There were many people who didn't understand what we were trying to do."

That first team worked night and day to design and manufacture our first computer product.

"You were simply self-driven," says Willie Austin of those early development days. Willie, who is a sales development manager in Business Systems today, was a support engineer working on the development of the 2116A. "The job was so interesting and challenging that I wasn't getting home too often and spending enough time with the family. I solved that problem by going home around seven o'clock and sneaking back to work when the family went to bed. I remember many nights of looking up and noticing it was four in the morning. So I'd go home and sneak into bed. I enjoyed the work so much that I might have worked for nothing."

Built from scratch

It seemed to the creators as if that first machine was being built from scratch. "There weren't many computers on the market in those days," says Ed Holland, "and so we had nothing to compare ours to. There wasn't any software to work with. There was no operating system. We spent most of our time writing our own software."

The 2116A was introduced at the Fall Joint Computer Conference in San Francisco in November, 1966. Arne Bergh was there. Now retired, but still working as a consultant for HP, Arne worked on magnetic devices for that first computer and remembers the 2116A debut as a real highlight. "We were so excited to be there," says Arne. "Here was this machine that not more than 15 people had built in a year. It was hard to believe we'd managed it."

The 2116A cost from about \$25,000 to \$50,000, depending on options, had 8K bytes of memory, was just over three feet tall and weighed about 500 pounds.

What really attracted customers to that

(continued on next page)

How it all began (continued)

first machine was its ruggedness. At that time, computers were generally housed in air-conditioned rooms with spring-loaded floors. The 2116A could go anywhere and operate in the toughest environments. In fact, our first customer for the computer was the Woods Hole Institute of Oceanography. The machine was placed on board one of their research vessels and worked perfectly in that environment for more than 10 years.

To underscore the machine's ruggedness, HP salesmen outfitted their stationwagons with the 2116A and offered on-site demonstrations, an unusual practice in those days. "Talk about well built," adds Ed Holland, "when one of those stationwagons was involved in a car crash, the salesman had to be rushed to the hospital but the machine was up and working after repair of one broken wire!"

The new computer to control instruments sold very well. To add to this first success, in 1968 HP introduced its first commercial product, the HP 2000A. It was a time-sharing system, a first in the minicomputer field, that was particularly well qualified for the educational market.

"...Let's not compete with IBM."

"There was always a hesitancy to go into the business computer marketplace," says Jim Taraldson, CMO test engineer who worked on our earliest computer products. At that time, according to Jim, management felt that HP should make computers to sell our instruments. "'Let's not compete with IBM,' was the feeling." Willie Austin adds, "There was a fear of IBM. We didn't want that company to know we existed. We thought of ourselves as a little bug that could be squashed by IBM." Now, of course, says Willie, we openly compete with Big Blue and talk candidly about market share. "That's a very positive change."

The new computers sold extremely well and the little computer group in Palo Alto took on many more people until their Palo Alto home was bursting at the seams.

Enter the Cupertino Site. It was purchased in 1968 from Varian and several Cupertino-based families. The computer gang moved down to the site in the spring of '69. The site had just two buildings then: 40 and 41.

What was it like in Cupertino then? Jim Taraldson describes the site. "It was almost all orchards except for two buildings. We called it the Apricot Division and farmers would get pretty angry with us when we employees ate their apricots at harvest time."

Building 41 seemed awfully big to Willie Austin when his group moved here. At first, when only a small band of employees occupied the huge, high-ceilinged Building 41, they would go from one end to the other by bicycle. "The space," says Willie with a laugh, "was so vast and open, we would hop on a bike to travel between the distant parts of the building. That made sense to us then."

Now that the computer group had a new home and focus, the computer products started coming out in a rush.

Tandem's CEO started here

There were some very high-powered employees working hard on the site to make and market those new products. One of them was **Jim Treybig**, now head of Tandem Computers. Jim came to HP from Stanford and became sales and support manager in the Cupertino Marketing Department in 1969. He stayed with HP for five years. "Our goal," he says with his Texan drawl, "was to build a \$100 million computer business in five years and we did!" Why did Jim leave HP? "I remember I was so tired at that time. I had worked so hard. And I wanted to be a venture capitalist...I left to do that." Jim later left the venture capital company he joined to form Tandem. Now he's back in Cupertino as the head of his own company. "I loved working for HP," says Jim. "It's a great company."

The HP 3000

HP announced plans to build the HP 3000 in 1971 at the Fall Joint Computer Conference in Las Vegas. We promised delivery in 1972 but, because of problems with the operating system, the company decided to take the product off the market. "That," says Arne, "was kind of a relief for us. Packard made that decision and it was a good one. Getting the 3000 out was not an easy matter. But when we got the bugs out, it became a great product for us."

The HP 3000 was reintroduced in 1973 and has become a best seller. Since then, computers have become such an integral and necessary part of our bottom line at HP, the question of whether we should be selling business computers versus instrument com-

puters is unthinkable. "At first," said an HP manager 10 years ago about our computer business, "it was the dog wagging the tail. Since then, the tail has succeeded in not just wagging the dog but whirling it around!"

A different drummer these days?

And the computer beat goes on...especially in Cupertino, a worldwide computer center for the company. Do we move to the beat of a different drummer these days? A great deal has changed, say those who helped develop those first computers and are still here. There's more specialization, our products and marketing are a great deal more sophisticated, we're more market driven and this site has grown and changed dramatically from those 200 pioneers in two buildings to almost 5000 employees in nine buildings. We've also introduced some pretty sophisticated computer products to complete an impressive array of computer options for our customers: the HP 9000 technical workstations, the HP 1000 line of technical computers, a variety of personal computer products and peripherals and now a series of products using an innovative and uniform computer design, HP Precision Architecture.

But some things have remained the same. The push to design and get products out is as heart-wrenching as it was in the old days. "I see people going through all these trials and tribulations here," says Arne Bergh. "Well it's the third time around for me. I expect it to be difficult." And our HP Way philosophy...how has that fared over the years? "I think we've done a good job in maintaining the philosophy," sums up Willie Austin, "actually a remarkable job when you look at the mobility of the people in the computer industry."

And what of the next 20 years...what can we expect?

Stay tuned folks...and fasten your seat belts!

— Shirley Gilbert



In the next four pages Insight arranges an introduction for you to the Cupertino Site.

We'll describe a 'typical' Cupertino employee to you (if there is such a thing); introduce you to the various divisions and organizations here; and give you some information on the workings of a giant site. Feel free to pull this section out for handy reference.

So get a comfortable seat. Observe the no smoking sign. And get ready for a whirlwind, information-laden tour of your HP neighborhood.

What's a typical Cupertino employee like? While it's almost impossible to find a typical anything in HP, here are some facts, for the statistically-crazed and others, about Cupertino employees that might help you get to know your neighbor a little better.

■ As a Cupertino Site employee you are part of a community of about 4,500 people. Approximately 30 percent of us work in

Cupertino People:

Getting To Know Us

Commercial Systems Division/Cupertino Manufacturing Operation and Cupertino Site Services: 16 percent belong to the Cupertino Marketing Groups; 18 percent to Information Networks Division/Business Networks Division and 36 percent are part of Information Software Division/Systems Technology Division.

■ Chances are you're a male since 58 percent on site are male and 42 percent are female. The organization with most females on site is the Cupertino Marketing Groups; least is Networked Systems Group (IND/BND/ISD/STD).

■ What do we do? About 55 percent of us are professionals (engineers, technical professionals, administrative professionals); 20 percent are managers; 15 percent do office and clerical work; 5 percent are in production and maintenance departments;

3 percent are technicians and 1 percent are in service areas.

■ You're apt to be working days since 96 percent of us are here during the day; 3 percent work swing and 1 percent are on grave shift.

■ The average length of time you're likely to have worked at HP is just over seven years.

■ Average age for employees on the site is 35.

■ Chances are you have kids since 63 percent of Cupertino people have dependent children.

■ You're likely to come to Cupertino from San Jose — at least 32 percent of our employees hail from there. Many come from Sunnyvale and Santa Clara and a few come from as far away as Sacramento to work here. About 75 percent of us commute less than 20 miles one-way to get here; 48 percent commute less than 10 miles one-way.

■ About 86 percent of us drive to work alone; 8 percent carpool and 3 percent take public transportation.

■ Most of us — 44 percent — come to work at 8 a.m. or later; 36 percent get here from 7 to 8 a.m.

Read on to find out what organizations your neighbors belong to on the site...

Cupertino Organizations:

Hands Across the Site

Let Insight introduce you to the business of the Cupertino Site. The glue that sticks it all together is the computer. Why are we here? To design, manufacture and market HP's state-of-the-art computers. It becomes more obvious every day that we can't do that in a vacuum. A stream of information, technology, ideas and expertise flows from one organization to the next in our town. That's what makes HP-Cupertino one of the most dynamic, charged and invigorating environments in all of HP.

**Organization:
Cupertino
Marketing Groups (CMG)**

- Managers:**
- Bill Murphy — BSS Marketing
 - Bill Hillard — Corporate VAC
 - Bob Frankenberg — ISG
 - Jerry Klemushin — MAM
 - Bob Weis — PMC
 - Dick Watts — TSS Marketing
 - Jim Arthur — USFO

Businesses/Services: Research and develop channels for HP to market products; provide product and marketing training, value-added channels programs, market sales development and MABCOM for HP's commercial and technical systems; answer questions from potential customers who are interested in our products; administrate functions for the U.S. field; sales and support activities for the U.S.; develop a working partnership with larger customers and provide a common set of marketing and support services to the field and its customers.

Sectors: Business Systems; Marketing and International; Systems Technology; Technical Systems.

Responsibilities: The Cupertino Marketing Groups consist of many diverse organizations providing marketing services and support to other Hewlett-Packard entities and customers. The organizations include:

- Business Systems Sector Marketing (BSS)
- Corporate Value Added Channels (Corp. VAC)
- Information Systems Group (ISG)
- Major Accounts Marketing (MAM)
- Peripheral Marketing Center (PMC)
- Technical Systems Sector Marketing (TSS Marketing)
- United States Field Operations (USFO)

**Organization:
Commercial
Systems Division**

General Manager: Nancy Anderson
Business/Services: HP 3000 Commercial Systems
Year Formed: 1977 as General Systems Division
Sector: Business Systems
Business Responsibility: Ensure the worldwide business success of the HP 3000 computer family and information management products.

**Organization:
Commercial
Systems Group**

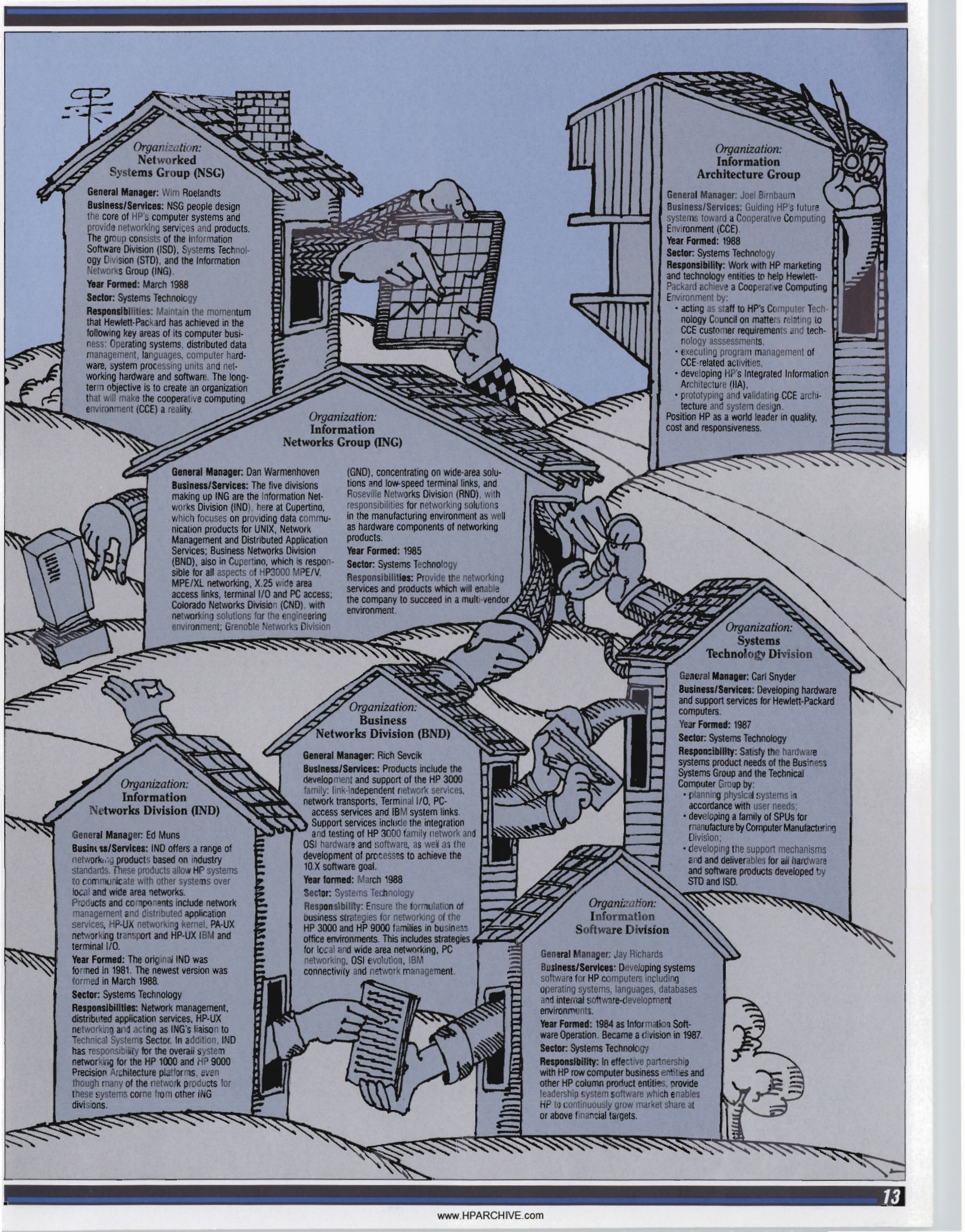
General Manager: Doug Spreng
Business/Services: Commercial Systems (MPE and UNIX) and Value-Added Solutions.
Year Formed: 1987
Sector: Business Systems
Responsibility: Ensure the worldwide success of Hewlett-Packard's Commercial Systems business through the integration of:

- innovative technology
- world class manufacturing
- excellent support services
- customer needs and competitive analysis

Provide effective solutions to our customers.

**Organization:
Vertical Markets**

Vertical Markets Manager: Bill Copeland
Business/Services: HP 3000 and HP Precision Architecture marketing programs.
Year Formed: 1983
Sector: Business Systems
Responsibility: Maximize sales of HP Commercial Computing Products in selected markets by providing Value-Added Businesses and/or HP solutions through innovative marketing programs.



Organization:
**Networked
Systems Group (NSG)**

General Manager: Wim Roelands
Business/Services: NSG people design the core of HP's computer systems and provide networking services and products. The group consists of the Information Software Division (ISD), Systems Technology Division (STD), and the Information Networks Group (ING).

Year Formed: March 1988
Sector: Systems Technology

Responsibilities: Maintain the momentum that Hewlett-Packard has achieved in the following key areas of its computer business: Operating systems, distributed data management, languages, computer hardware, system processing units and networking hardware and software. The long-term objective is to create an organization that will make the cooperative computing environment (CCE) a reality.

Organization:
**Information
Networks Group (ING)**

General Manager: Dan Warmenhoven
Business/Services: The five divisions making up ING are the Information Networks Division (IND), here at Cupertino, which focuses on providing data communication products for UNIX, Network Management and Distributed Application Services; Business Networks Division (BND), also in Cupertino, which is responsible for all aspects of HP3000 MPE/V, MPE/XL networking, X.25 wide area access links, terminal I/O and PC access; Colorado Networks Division (CND), with networking solutions for the engineering environment; Grenoble Networks Division

(GND), concentrating on wide-area solutions and low-speed terminal links, and Roseville Networks Division (RND), with responsibilities for networking solutions in the manufacturing environment as well as hardware components of networking products.

Year Formed: 1985
Sector: Systems Technology
Responsibilities: Provide the networking services and products which will enable the company to succeed in a multi-vendor environment.

Organization:
**Information
Architecture Group**

General Manager: Joel Birnbaum
Business/Services: Guiding HP's future systems toward a Cooperative Computing Environment (CCE).
Year Formed: 1988
Sector: Systems Technology
Responsibility: Work with HP marketing and technology entities to help Hewlett-Packard achieve a Cooperative Computing Environment by:

- acting as staff to HP's Computer Technology Council on matters relating to CCE customer requirements and technology assessments.
 - executing program management of CCE-related activities.
 - developing HP's Integrated Information Architecture (IIA).
 - prototyping and validating CCE architecture and system design.
- Position HP as a world leader in quality, cost and responsiveness.

Organization:
**Systems
Technology Division**

General Manager: Carl Snyder
Business/Services: Developing hardware and support services for Hewlett-Packard computers.

Year Formed: 1987
Sector: Systems Technology

Responsibility: Satisfy the hardware systems product needs of the Business Systems Group and the Technical Computer Group by:

- planning physical systems in accordance with user needs;
- developing a family of SPUs for manufacture by Computer Manufacturing Division;
- developing the support mechanisms and deliverables for all hardware and software products developed by STD and ISD.

Organization:
**Information
Networks Division (IND)**

General Manager: Ed Muns
Business/Services: IND offers a range of networking products based on industry standards. These products allow HP systems to communicate with other systems over local and wide area networks.

Products and components include network management and distributed application services, HP-UX networking kernel, PA-UX networking transport and HP-UX IBM and terminal I/O.

Year Formed: The original IND was formed in 1981. The newest version was formed in March 1988.

Sector: Systems Technology

Responsibilities: Network management, distributed application services, HP-UX networking and acting as ING's liaison to Technical Systems Sector. In addition, IND has responsibility for the overall system networking for the HP 1000 and HP 9000 Precision Architecture platforms, even though many of the network products for these systems come from other ING divisions.

Organization:
**Business
Networks Division (BND)**

General Manager: Rich Sevcik
Business/Services: Products include the development and support of the HP 3000 family: link-independent network services, network transports, Terminal I/O, PC-access services and IBM system links. Support services include the integration and testing of HP 3000 family network and OSI hardware and software, as well as the development of processes to achieve the 10.X software goal.

Year Formed: March 1988

Sector: Systems Technology

Responsibility: Ensure the formulation of business strategies for networking of the HP 3000 and HP 9000 families in business office environments. This includes strategies for local and wide area networking, PC networking, OSI evolution, IBM connectivity and network management.

Organization:
**Information
Software Division**

General Manager: Jay Richards
Business/Services: Developing systems software for HP computers including operating systems, languages, databases and internal software-development environments.

Year Formed: 1984 as Information Software Operation. Became a division in 1987.

Sector: Systems Technology

Responsibility: In effective partnership with HP row computer business entities and other HP column product entities, provide leadership system software which enables HP to continuously grow market share at or above financial targets.

**Organization:
Computer Manufacturing
& Planning Group**

General Manager: Brian Moore
Business/Services: Integrated management processes for the computer business and worldwide computer products manufacturing.
Year Formed: 1987
Sector: Systems Technology
Responsibility: Be a competitive supplier of computer systems and products to HP's worldwide market. Develop and facilitate the management process for the HP computer business. Develop and facilitate the ten step business planning process for HP.

**Organization:
Systems
Programming Planning**

Director: George Bodway
Business/Services: Designing and facilitating integrated processes for HP's computer systems.
Year Formed: 1986
Sector: Systems Technology
Responsibility: Design and facilitate seamlessly integrated processes for the planning and implementation of HP's computer systems. Produce accurate plans and complete descriptions of development programs and their schedules. Ensure that issues are recognized, investigated and resolved expeditiously between row/row, row/column and column/column organizations.

**Organization:
Computer
Manufacturing Division**

General Manager: Dick Love
Business/Services: Worldwide Supplier of Computer Systems and Products
Year Formed: 1987
Sector: Systems Technology
Responsibility: Be a dependable supplier of computer systems and products to customers served by the Commercial Systems, Technical Computer and Information Networks Groups.
Position HP as a world manufacturing leader in quality, cost and responsiveness.

**Organization:
Cupertino
Site Services**

Site Services Manager: Dan Derby
Business/Services: Facilities, Materials Management, Communication, Loss Prevention and Risk Management
Year Formed: 1984
Responsibility: Develop and manage the major assets and non-product related services which are common to the entities at the Cupertino site.

**Organization:
Cupertino
Manufacturing Operation**

Operations Manager: Tom Rohrs
Business/Services: HP 1000 and HP 3000 computer systems
Year Formed: 1986
Sector: Systems Technology
Responsibility: Manufacture HP's mid-range to high-end systems processing units (HP 1000 and HP 3000) to multiple markets worldwide.

The Cupertino Site: Our Town

Cupertino Site Services Manager Dan Derby often likens this 4,500-person site to the small town he was raised in in Texas. "It's bigger," he says. What's this not-so-small town like to take care of? Challenging, sometimes frustrating, but never boring says Dan. And certainly different from his home town. "Toto," Dan adds with a grin when he talks about the site, "I don't think we're in Kansas anymore." Dan heads up a group of over 300 employees who labor to keep this town safely humming. Here are some facts about our town you probably didn't know.

Location: HP-Cupertino is located in the Santa Clara Valley. The site is 50 miles from San Francisco in the City of Cupertino. The population of Cupertino is 38,666.

History: Purchased in 1969 from Varian and several Cupertino-based families.

Size: 1,236,000 square feet (28 acres) on 97 acres of land; HP's largest and densest site.

Buildings: Nine HP-owned buildings. Three leased facilities.

Office environment: 14 acres of chairs and desks; four acres of computer rooms; 1,064 doors on site.

Electronic equipment supported: 1,741 minicomputers; 3,600 personal computers; 13,791 other electronic devices.

Major communication capabilities: Four telephone switches; 5,800 voice phones; 8,000 computer "phones"; 1,500 phone changes a month; 24,000 miles of wire.

Moving experiences: Site services organization moved 4,500 people in 1987.

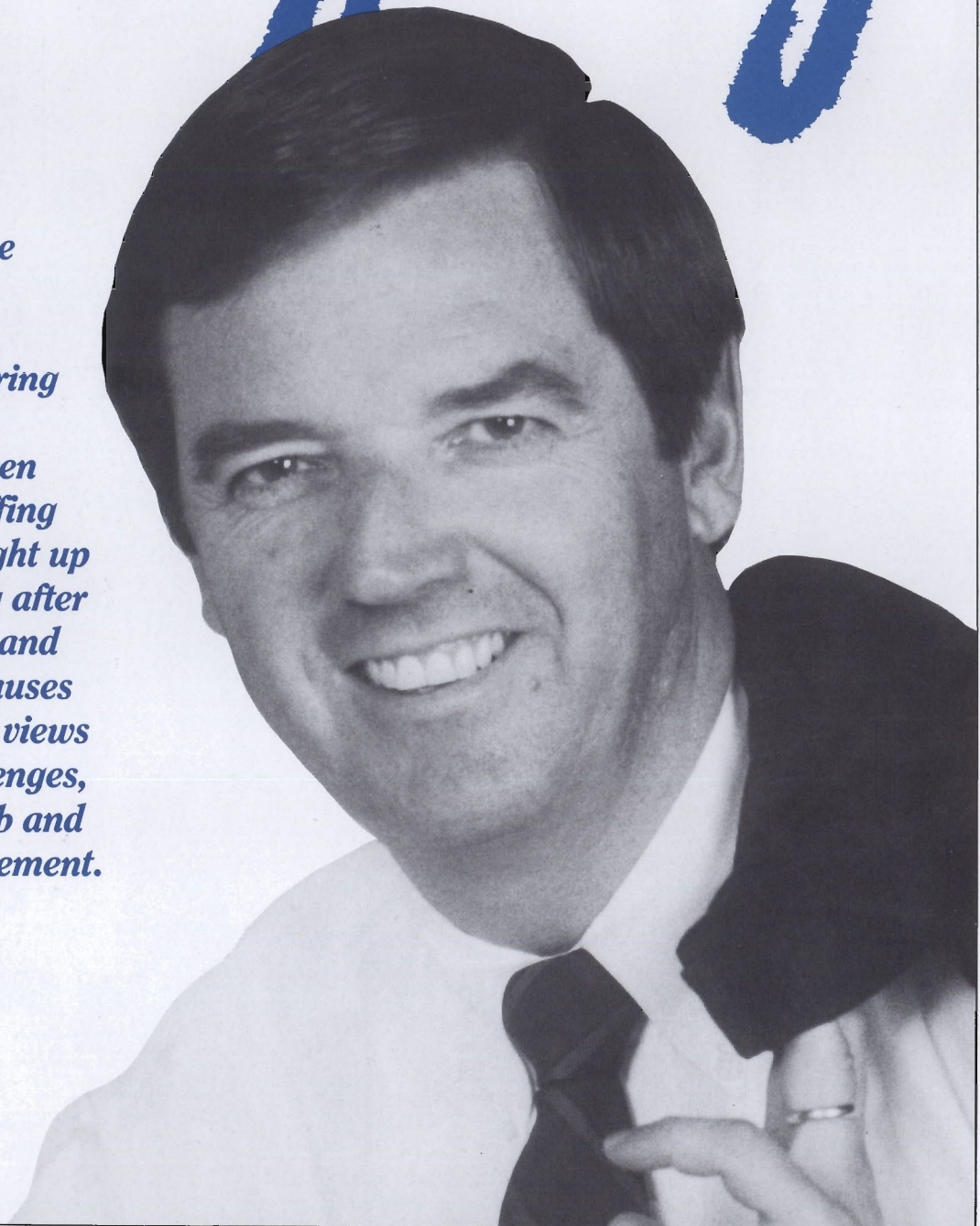
Famous visitors: The Queen of England; King of Denmark; Duke and Duchess of Luxembourg to name a few.

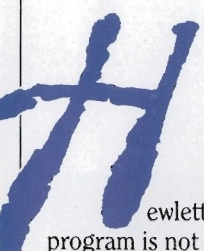


Meet Manager Bill...

Bill Murphy

He's bold. He's brash. He's colorful. And he's helping to lead the charge of a more aggressive HP into the business systems marketplace. We're referring to Bill Murphy, Business Systems Sector's outspoken marketing manager. Huffing and puffing, Insight caught up with fast-moving Murphy after a hectic day of meetings and phone calls. Here, Bill pauses long enough to share his views on HP's marketing challenges, how he feels about his job and his philosophy of management. Let's listen in.





ewlett-Packard's marketing program is not without its critics.

One of them once suggested that if HP was marketing sushi, we'd sell it as cold, raw fish on ice.

Marketing Manager Bill Murphy feels that there may have been some truth to the essence of this charge in the past but that this outdated view of HP's marketing approach is changing. "People recognize that a change has taken place in HP over the last few years. We're a more market-oriented company now."

One example of this, according to Bill, is how we name products today. The traditional style, he says, would be to call a product the "HP2686A." The new way is to use a word like "LaserJet," a name that people can recognize.

"We're also," continues Bill, "taking a much more aggressive attitude toward industry watchers, consultants and the press, as shown by the feature article we had in *Business Week* recently (March 7th issue). I think this shows that the HP of today is more proactive, aggressive and outward-looking than ever before."

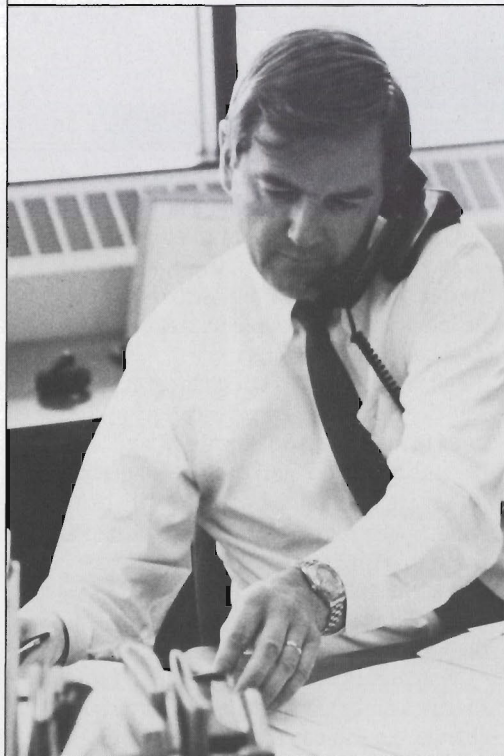
True, says Bill, we haven't yet succumbed to the razzle-dazzle style of some computer companies. "But we've come a long way," he adds. And the results, he says, are apparent. We're a much better-known company now.

The *Business Week* article, entitled "Mild-mannered Hewlett-Packard is making like Superman," helped herald the new, bolder marketing style of HP. Bill's quote, from conservative HP, certainly raised a few eyebrows. He suggested that HP would run any application against DEC and IBM and "kick their ass."

We can win over DEC

"I wanted to make the point that this is a different HP," explains Bill. "That specific quote was referring to running benchmarks relative to the competition. It's a very competitive market — it's not duck soup. But we've got what it takes to win. It's a fact. We can win over DEC. We can kick DEC's ass."

Bill is certainly a different type of manager representing HP in the market-



A typical day for Bill is filled with meetings and phone calls.

place. Is he out of sync with the rest of the company?

"I think that the traditional HP has a lot of wonderful attributes," says Bill. "But in certain markets in today's environment you just have to be more assertive. That doesn't mean we should change some of our company's basic concepts." It shouldn't, emphasizes Bill, change the way we treat our peo-

ple or our customers. But a new style, he says, is needed to compete successfully in the late '80s and '90s. "It isn't inconsistent with the HP Way," continues Bill, "to stand up and toot your own horn, to compare yourself favorably with your competitors as long as you do so in a consistent, forthright and honest manner."

What's changed for HP?

The customer is different, affirms Bill. In the early days of selling instruments, engineering customers typically wanted the facts presented in an analytical manner. In today's consumer-oriented businesses with products like handheld calculators, printers and personal computers, you must have a total marketing package surrounding the product that not only explains but vigorously sells... sells not only the steak, but the sizzle as well.

HP, says Bill, faces several tough marketing challenges. "As we continue to grow," says the marketing manager, "we have to adapt to a rapidly changing environment brought about by changes in products and competitors' approaches." Bill and his team spend a lot of time and energy clarifying our marketing position and then hammering home the important things we want to stress.

The competition is good, smart and bigger than we are.

One of the biggest challenges we face is countering the offensives of some very aggressive competitors. The competition, according to Bill, is good, smart and bigger than we are. "If you look at what has been called the minicomputer market," explains Bill, "we're one of the top second tier companies. There's IBM, DEC and then a big gap before you get to HP, Unisys, NCR, Wang, Tandem, etc. To be successful, we've got to separate ourselves from the pack."

How do we do that?

It's important to have a vision and goals and to know what you have to do to hurtle

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Murphy (continued)

some of the obstacles. "IBM, for example, is the epitome of one of the best-run companies in the world and has massive resources. DEC is the upstart company that has done fabulously well in the mid-'80s. Well, HP is going to be the company to watch in the late '80s and '90s. We will basically do to DEC what DEC did to IBM."

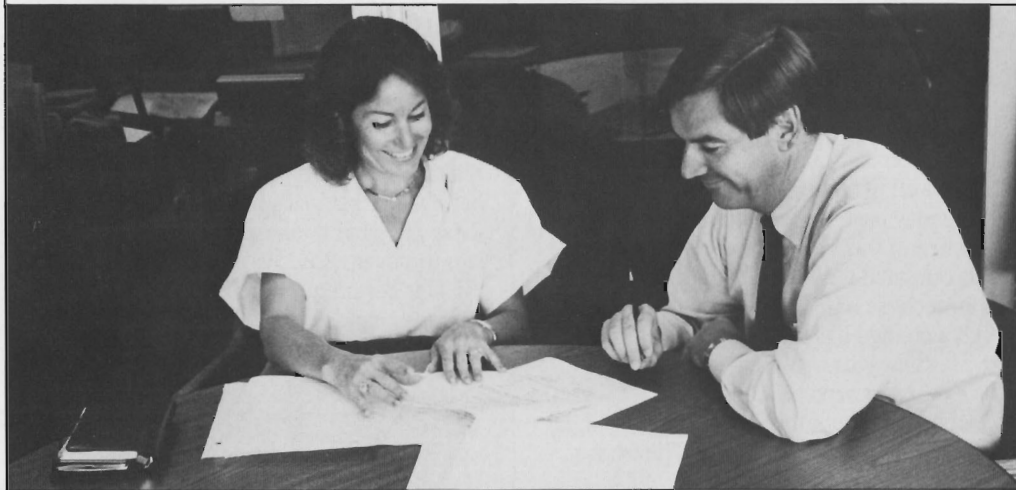
One of the ways we've been countering the offensives of our competition is to enhance our name recognition through commercial campaigns like the 'What if...' series. Russell Baker of the *New York Times*, who watched the TV series during the football season, wondered what a Hewlett-Packard was (he said he couldn't figure that out from the commercials) and wrote that HP employees seemed compulsive and driven. Despite this criticism — and Bill says he's never been associated with an ad campaign that didn't generate some negative feelings — the response to the 'What if...' ads has been very positive. "The numbers," says Bill, "in terms of awareness and preference, have exceeded our expectations."

Research that HP did prior to the campaign, according to Bill, indicated that customers felt the dedication of HP employees was HP's strongest asset. The 'What if...' series capitalized on this point. Bill adds that we received plenty of comments from customers on the campaign. "One person wrote to make the point that if your HP guy is so smart why doesn't he have a phone in his bedroom," laughs Bill. "Another woman said that if her husband came down from the shower with wet feet, she would have killed him." What this tells you, says Bill, is that people are watching and getting the message. It says: HP people are dedicated and solving customers' problems. Now, Bill believes, it's up to us to be able to execute and deliver on that promise.

A typical day

Bill's days are seldom boring and almost always busy. They can start with a sales meeting at breakfast and last into the even-

Susan Curtis, consultant channel manager, briefs Bill on an upcoming visit to a New York-based consulting partner.



ing with a late dinner with a customer.

Although his business life can be pretty hectic, Bill enjoys being marketing manager of such a dynamic part of the company. He started as an engineer but discovered what he liked most was people interaction and the challenge of selling.

Bill began his marketing career in HP as a service engineer. He held a variety of positions in marketing organizations and became a division marketing manager in Boise. He went on to become group marketing manager for peripherals, then came to Cupertino when the dealer channel was first being put together in 1984.

Did Bill plan his career every step of the way?

"Sometimes," he says, "it's difficult to plan specific career steps because circumstances change. So you can't really say you have your heart set on one particular job... that doesn't always work. On the other hand, I think it's important to have a vision of where you want to go and what you want to do and to tie that into broad goals rather than a particular job."

A positive outlook

People who work with Bill describe him as someone who smiles a lot but who also demands the very best. "I believe in communicating a positive attitude and lots of

enthusiasm for what we're doing," says Bill. After all, Bill points out, HP is considered to be one of the best-run companies in the world. "That distinction," he says, "is not easily won. We're demanding and we have to be."

Bill sums up his own management philosophy. It's a mix of plenty of enthusiasm, a positive outlook, creating a vision, having definite goals and a can-do attitude.

One thing the busy marketing manager finds hard to do is juggle his time at work with time at home. "It's an issue," he adds, "that every manager at HP faces. You just have to prioritize and work smarter."

Bill likes to unwind by skiing, flyfishing and playing golf and tennis. He also enjoys spending as much time as he can with his wife Brenda and their children Cheryl and Kristin. Bill also finds time to help out in the community and is Chairman of the Board for the San Jose Chapter of the American Red Cross.

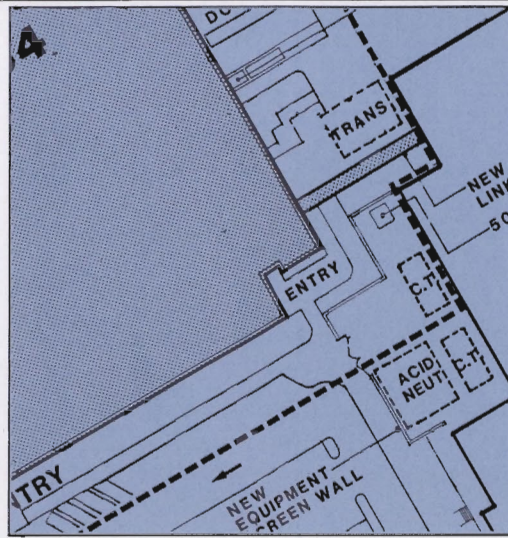
But free time is hard to come by. Bill loves and is thoroughly involved in the hurlyburly world of marketing. And he really believes in the new direction HP is taking in marketing. "We've got what it takes to win," says Bill confidently and resolutely. "And we *will* win!"

— Rob Youngberg

With its emphasis on employee and customer comfort, this new HP building will be a great place in which to work and build products!

The Cupertino Manufacturing Operation's (CMO) new factory is so process and productivity driven, it's sure to become a model in the manufacturing community.

It's also so streamlined, smart and efficient, it's sure to be the forerunner of HP's building of the future, a building that can serve marketing, manufacturing or any HP organization in style.



Customer conscious

If all goes as planned, in June, 1989, CMO's factory of the future will occupy the fifth and final building erected on the Santa Clara Site at Stevens Creek Boulevard and Lawrence Expressway. The features of the new building, number 54, stress a customer-oriented focus and HP's high standards of quality.

"We typically have at least three customer tours a day," says **Laura Mullen**, CMO process engineer, who is part of the CMO team helping to design the building. "We recognize the importance of giving our customers a positive first impression of our operation." Customers will get that favorable feeling when they arrive at the stately

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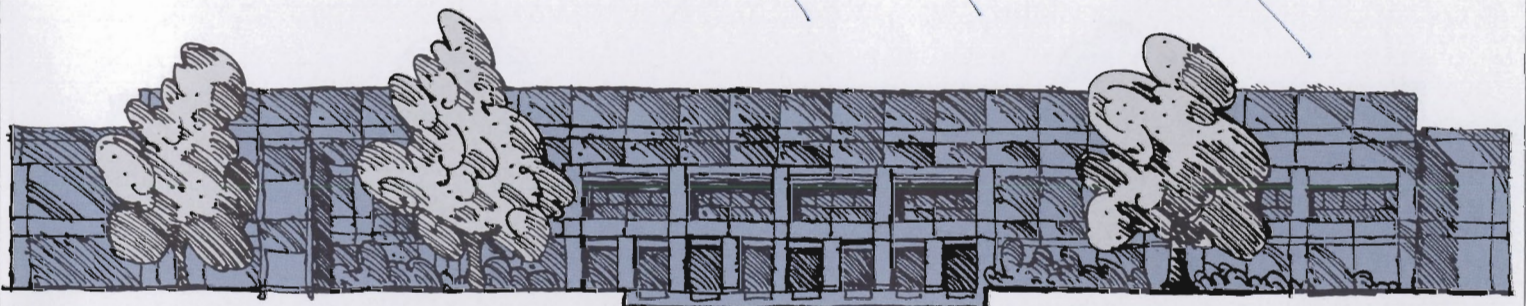
CMO's Factory of the Future

U-shaped factory floor plan

Permanent artwork

Customer lobby

Video conference room



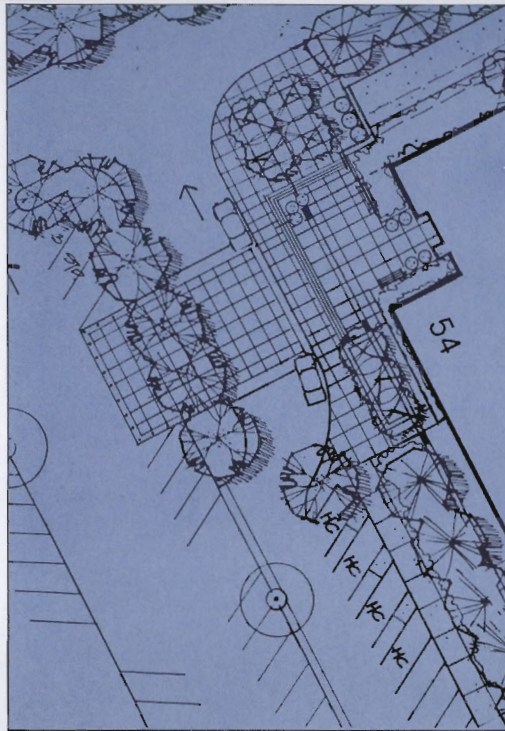
CMO's Factory (continued)

entrance of the building. It's so important, says Laura, because it can set the tone of a customer's entire visit.

"We've carefully designed a customer lobby with that in mind," adds **Bob Diggle**, Building 54 project manager from the Corporate Facilities Department. Modern office furniture and permanent artwork, especially designed for the new building, will create an aesthetically appealing environment. "In addition to the special customer lobby," Bob continues, "there is a parking area in front of the building specifically marked for customers. We intend to make every customer's visit convenient and satisfying."

Amenities

The first level of the 216,000-square-foot building is reserved for the factory floor and the second for administration. The building also has 15 conference rooms which range in size from small, six-person capacity rooms to larger rooms that can hold up to 24 people. A special video room is also being designed to hold conferences with other HP locations.



According to the new building's planners, employees have requested and need privacy and a quiet place to work. To achieve that, an open office plan was selected that uses sound absorbable materials such as ceiling tile, office partitions and carpeting to control the noise level. All of these features add to the high quality work environment noticeable to both employees and customers.

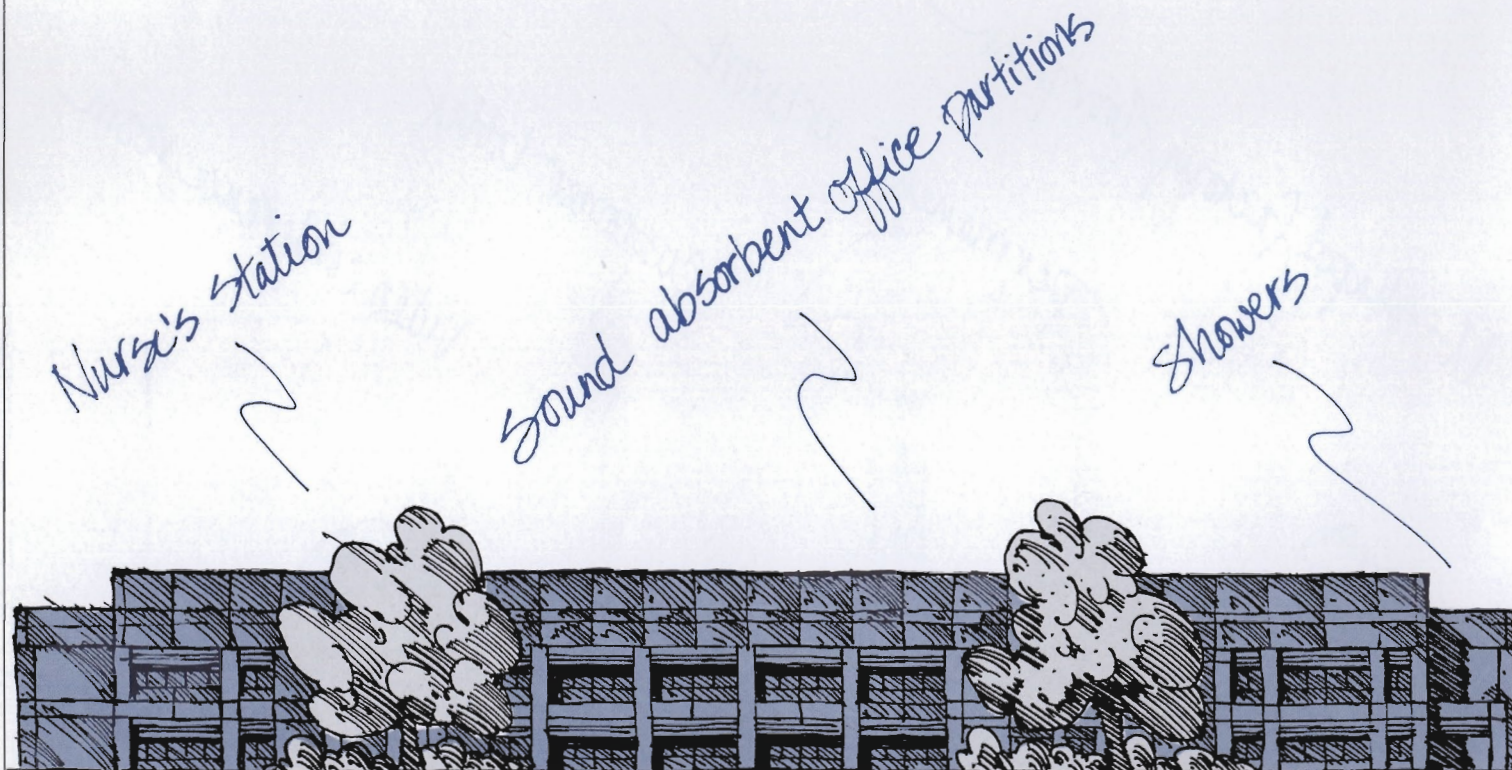
"There will also be a background sound system," says Bob. "It's similar to the sound of an air-conditioner, but it's especially tuned in on an acoustical soundwave that interrupts voice sounds. It's a consistent sound that comes from speakers above the ceiling."

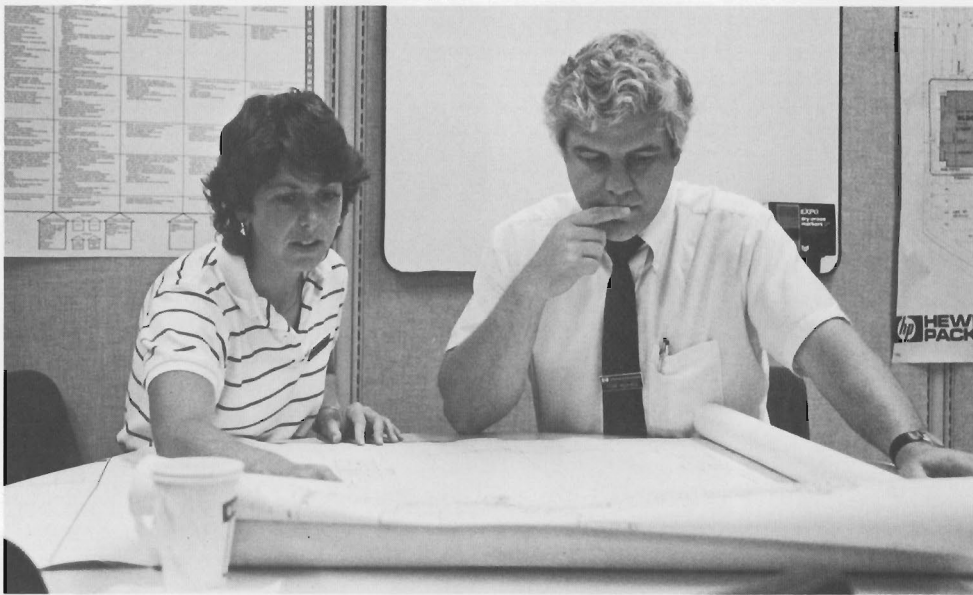
Like most HP buildings, the new one will have its own nurse's station, coffee stations, showers and locker rooms. As for employees' recreational interests, a park course borders the edge of the site nearest Building 54 for joggers and walkers. Also, the City of Santa Clara has agreed to open the now fenced-off city park adjacent to the site for employees to enjoy.

The factory floor

"One of the key success factors in our business is the timely introduction of new products," adds CMO Operations Manager **Tom Rohrs**. "Our new facility will be able to accommodate both our current generation of computers and our future products now being designed."

Flexibility. That's another key ingredient in this factory of the future. Without it, it would be tough to keep up with the changing demands in today's competitive manufacturing environment. Like CMO's factory in Building 44L, the new factory will have an efficient U-shaped layout and





CMO Operations Manager Tom Rohrs reviews the factory floor layout with Process Engineer Laura Mullen.

design. “The U-shape will not only help optimize material movement, it will also allow us to expand,” says Laura.

The beauty of this floor plan, according to Laura, is that it not only makes things easily convertible, but it also allows changes to be made very inexpensively. “The term ‘cheap to change’ is something that’s often referred to in CMO,” says **Paul Draper**, Santa Clara Site facilities engineer. “It has been a priority for this manufacturing environment to allow for maximum flexibility.”

In tune with the market

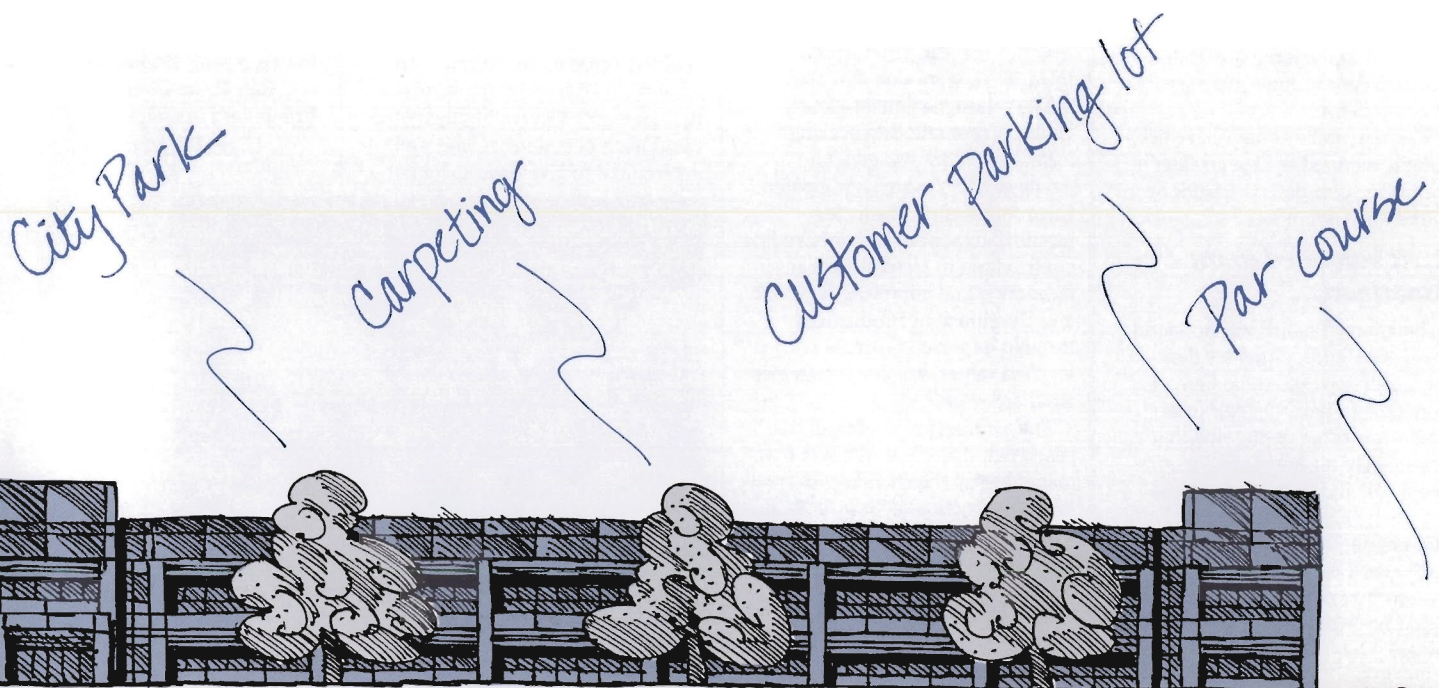
Quality has been a top priority for the Building 54 project team in developing plans, but keeping up with our current economy is also essential. That means new HP buildings, like number 54, are being designed to house anything from a factory of the future to an open office environment. Our buildings will be more versatile and will thus increase their value in today’s real estate market.

According to Bob, HP’s current approach to the design and construction of a new building is making smart economic decisions. “Expensive, high cost, custom-designed buildings,” says Bob, “are a thing of the past.” New HP buildings now focus on building materials that are carefully reviewed for both cost and functionality.

A design team made up of HP project management, architects, engineers and the contractor all work together to ensure that cost and functionality are well-balanced. The Corporate Facilities Department helps maintain the company image, cost effectiveness and HP-inspired aesthetics of the building to improve the overall functionality for its HP occupants.

Says Bob, “I think this whole process is another example of the HP Way — different HP departments involved in a cooperative effort while sharing a common interest in the company.”

— Barbara Kawamoto



At A Glance

The ring that got around...

A discovery made 12 years ago in the midst of a snowball fight in the Austrian Alps by a German youth who later joined HP has recently developed into a tale that could easily qualify for an episode of "That's Incredible."

During a 1976 mountain outing, **HP-Boeblingen Germany Support Engineer Alfred Haaga**, then 17, noticed a small, shiny object in an icy clump of snow he was about to hurl at a friend. Luckily for Dr. Ross Williamson, Texas A&M, class of 1957, young Alfred never followed through with his pitch.

The object turned out to be Williamson's class ring which he lost in a similar-style snowball fight during a visit to the same spot in the Austrian Alps in June, 1975, just one year before.

The ring and its owner have been happily reunited — 13 years later — thanks to some detective work by Alfred and a lot of luck.

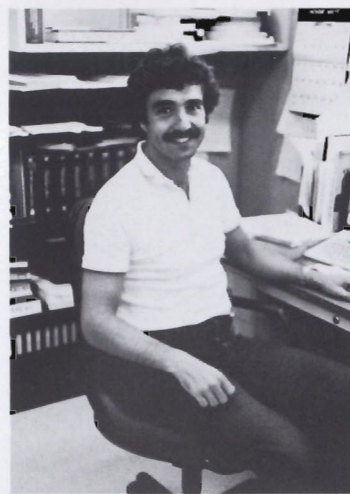
"...it belonged to an American..."

"Though my English was not good then," says Alfred, from his desk on the Cupertino Site where he visits from time to time, "I knew from what was written on the ring that it belonged to an American." Several people offered to buy it from him the day he found it, but Alfred held on to it, put it away and forgot about it. "It was a nice piece of jewelry," he remembers, "but I thought it would be impossible to ever find the owner."

That was true until he met up with some HP employees from America working in our Boeblingen facility with him. "They told me of the importance of this kind of ring to an American," he says. "We don't really have this type of thing in Germany."

One of his new friends from the U.S., **CSY Support Engineer Marc Schmidt**, suggested that Alfred get in touch with the Texas A&M Alumni Association to see if the people there might help him locate the owner. The tip panned out. Using the first initial and the last name inscribed inside the ring, along with the graduation date, the alumni association was able to supply Alfred with Dr. Williamson's current address. Then, in late May, during his recent visit to CSY's Commercial Systems Support Organization, he obtained the Palestine, Texan's phone number from the operator and gave him a call.

As soon as Alfred was assured that Williamson was the ring's true owner — he made him describe it in detail over the phone — he mailed it to him. As a thank you, Williamson sent Alfred a gold money clip.



Ring bearer Alfred Haaga.

"I thought... I'd never see it again."

"I was in shock," the U.S. Department of Agriculture veterinarian said in a recent telephone conversation. "All of my relatives had pitched in to buy that ring for me years ago. When it flew onto the side of that mountain, I thought that was it... that I'd never see it again. And as a proud Texan I was so embarrassed about how I lost it, I didn't tell anyone about it then and I haven't told anyone for all these years until now."

Alfred, on the other hand, feels a little shy about it all. "I just feel badly that I had it all that time."

But better late than never is a maxim that one happy Texan would applaud.

— Kathy Mirtallo

Applause! Applause!

Congratulations to the Information Software Division (ISD) Turbo-IMAGE/XL team, winner of this year's Distinguished Chuck House Productivity Award.

Corporate Engineering Productivity Awards are given yearly to projects or individuals in R&D for software, electrical and mechanical engineering achievements. One overall winner receives the highest honor — the Chuck House Productivity Award. This year, ISD's Turbo-IMAGE/XL team won that award.

The award, named for Chuck House, Corporate Engineering's former director (now general manager of Software Development Environments), is given "for meritorious service and outstanding contribution to Hewlett-Packard in promoting and improving Research and Development Productivity through improved processes, instilled values, visionary strategies and hard work."

The winning project began last year when ISD's TurboIMAGE/XL team took up the challenge of creating a new version of TurboIMAGE, a database product designed to run on the MPE/XL operating system.

Completed in six months!

The product, TurboIMAGE/XL, was identified as one of the major areas

that could offer opportunities to further increase the performance of the MPE/XL system. The team's goal was to create it in time for the first release of the HP 3000 Series 930. This sort of project would typically have taken 12–15 months for a team to complete — this team completed it all in just six months!

"Strong teamwork across four labs was the project's key success factor," says **Bob Perreault**, Turbo-IMAGE/Data Dictionary section manager in the Distributed Data Management Lab.

Tu-Ting Cheng, the Turbo-IMAGE/XL project manager, couldn't agree more. "Along with teamwork, I'd have to emphasize that we worked with a highly motivated team of engineers who were determined to give their absolute

best to this project," says Tu-Ting. "We were also fortunate to have had equally strong management support and substantial resources to make things work."

Congratulations to the Turbo-IMAGE/XL team: **Tu-Ting Cheng, Nelson Chan, Frank Dean, Debbie Fu, Susan Hu, Peter Lau, Kathy Montgomery, Mike Pechulis, Jim Stratton and Anna Zara** from the Distributed Data Management Lab (DDML); **Al Kondoff and Paul Wang** from the MPE System Operation (MXO); **Danny Ku and Peter Friedenback** from the System Performance Lab (SPL); and **Chris Maitz, Manoj Dadoo, Bob Hansen and Ron Rasmussen** from the Computer Language Lab (CLL).

— Barbara Kawamoto



Members of the DDML project team display Turbo-IMAGE/XL's awards. From left are: (front row) Tu-Ting Cheng, Peter Lau, Mike Pechulis, Jim Stratton (second row) Frank Dean, Anna Zara, Susan Hu, Debbie Fu and Nelson Chan.

Cross country for a good cause

After peddling her way across more than 3,400 grueling miles of mountains, open plains, and busy, big city streets, **Regional Marketing Engineer Liz Montgomery** of the **Business Systems Marketing Center** is back home in Cupertino.

Liz was one of 307 cyclists who participated in the second annual TransAmerica Bicycle Trek which raised more than \$2 million for the American Lung Association to help fight lung disease. Liz raised over \$5,400 from mainly Hewlett-Packard employees in Cupertino.

Starting out in Seattle, Washington, on June 6, 1988, Liz cycled through towns such as Elmo, Montana; Makoti, North Dakota; St. Cloud, Minnesota and Baraboo, Wisconsin, before arriving in Atlantic City, New Jersey on July 22, 1988.

The trek wasn't always easy. The most grueling part of the journey was the four days Liz spent in North Dakota when she faced 30-mile-per-hour headwinds. This made the nearly 400-mile stretch exhausting for her. "It was very demoralizing," she says. "I had to fight to turn each pedal. It felt as if I was riding backward."

In addition to the punishing headwinds, Liz also cycled through sweltering heat, electrical storms, hail, floods and over mountain ranges. She had more challenges than a postman.

"I kept thinking of all the people... who believed in me."

"There were times," says Liz, "when it was difficult. But I kept thinking of all the people who gave money

and believed in me. I knew I couldn't let them down."

There were plenty of special moments along the way that more than made up for the tough times. One was the spectacular view the bikers enjoyed as they climbed the "Going to the Sun Highway" in Glacier, Montana. "Everywhere you looked there were snowcapped mountain tops, green forests, mountain goats, butterflies and flowers," recalls Liz.

Another memorable moment occurred while riding through a rural area of North Dakota, when Liz met a 70-year-old man at a smalltown auction. When Liz learned that he played the harmonica, she convinced him to play for the group at their camp site that evening. "We all clapped, sang, stomped our feet and had a great time," says Liz. "We took a photograph of him which everyone signed. His joy at being able to play for us and have the photo as a memory to take with him stands out in my mind as something very special."

"...A lot of good people across the nation."

Not only did Liz help a good cause with the support of the people who sponsored her, she also learned a great deal. "I saw first-hand some of the problems people are facing, such as the severe drought in the Midwest. It made me realize how fortunate I am to have a nice job at a good company. But most of all what stands out is the knowledge that there are a lot of really good people across the nation."

Liz is certainly one of them!

— Rob Youngberg



Requiem for a peppertree

You served us well *schinus molle*. You spread your filigreed branches over our courtyard like a benediction. You graced this Cupertino place with beauty and nobility and light, your 40-foot height and 36-foot spread inspiring us to view you as a symbol of the natural beauty of this area, a symbol of our site.

You were very old the experts say. Perhaps 100 years old. We'll know for certain when we cut you down and inspect the rings of your trunk. And you died of a disease with a strange name — *polyporous fungus* — that caused unsightly mushroom-like protrusions to stick out all over your regal, knotty trunk.

Many will miss you peppertree. You're part of the tradition of this place. Covies of quail used your branches and scurried around your trunk. A few employees on this site remember climbing up your trunk when they played hooky from school. And one even remembers hiding in your leaves with a handful of apricots, grinning at the harvesters close by as he chomped on forbidden fruit. Your death is felt as a kind of loss for many — a part of their histories destroyed.

A grey cloud...

At this writing you may be gone. You weren't pretty at the end. A grey cloud seemed to come down on you and your rich, green tones grew dimmer every day as the grey descended further and further into your body, into your soul. And, oh, those beautiful green branches, now bleached of color, drooped like tendrilled tears to the ground.

What's to become of you? There are plans. The trunk will go to an employee on this site who would like to arrange to have a commemorative table or bench made of it. The wooden reminder will be displayed somewhere on the site so that you can be properly remembered. The rest? Good for firewood, good for employees to haul home to feed their winter fires.

You have to be removed, peppertree, because you're a health hazard where you are drooping in the courtyard. Since your trunk is hollow, a wind might blow you over and that could be a danger to someone.

Of course, there are other peppertrees on our site — three in fact — but none as magnificent as you were. The three are not entirely well and our gardeners are fighting to save them and bring them back to good health.

Pretty soon — if this hasn't happened already — contractors will come with chainsaws to cut you down. And another tree will take your place. One, our site maintenance people assure us, that will be as beautiful and as impressive as you are.

100 years of service

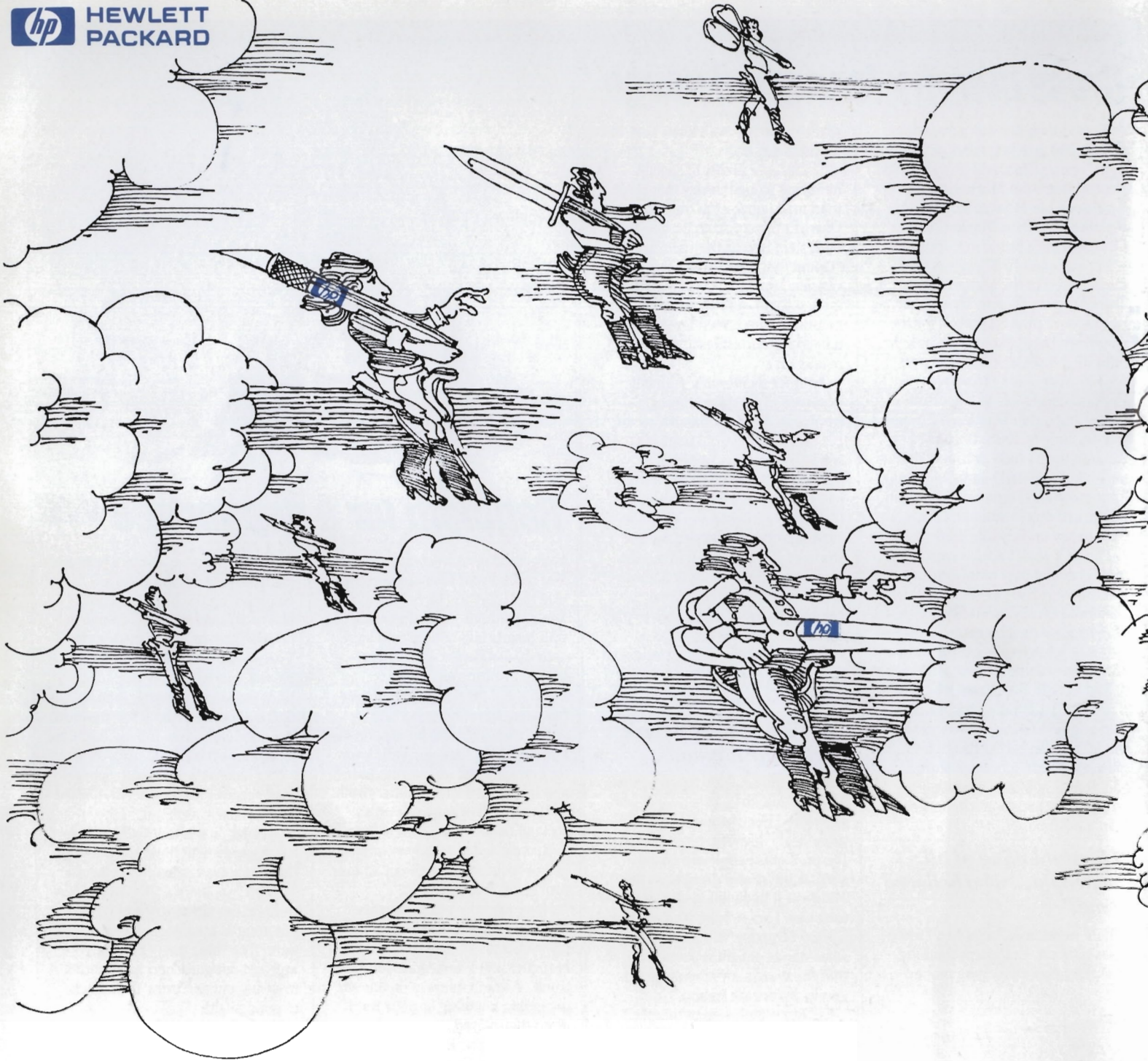
But we'll remember you peppertree. After all, one hundred years of magnificent service is nothing to sneeze at. When the wind is just so, we'll think of how it filtered through your filmy branches. When spring comes, we'll remember the soft green of your leaves and the dreamy softness they inspired in us.

And by remembering, you'll live forever.

— Shirley Gilbert



Liz Montgomery and her trusty bike.



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