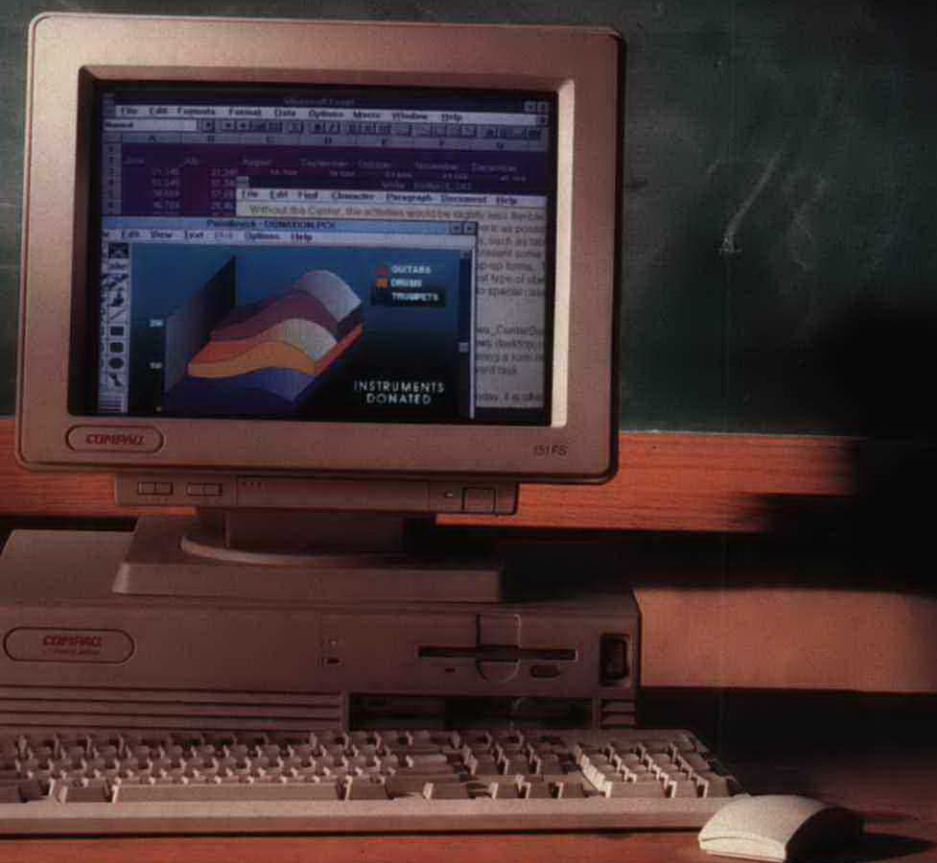




FROM THE COMPANY  
TAUGHT THE WORLD  
TO COMBINE POWER  
AND AFFORDABILITY:  
LESSON TWO.





# MANAGING BY VALUES

IS LEVI STRAUSS' APPROACH VISIONARY—OR FLAKY?

**T**alk, talk, talk. As a black mid-level executive at Levi Strauss & Co. in the early 1980s, that's all Louis Kirtman got from the white men above him in top management. Levi's had long enjoyed a reputation as a socially responsible employer. But that didn't mean much to Kirtman as he watched black executives he thought were highly qualified passed over for plum jobs, while his own career seemed stalled on a lonely plateau. Top management always mouthed diversity, Kirtman says, "but in the end, they chose people they were comfortable with" for key positions.

Fast forward to 1994, and Kirtman is a much happier man. As president of Levi's Britannia Sportswear division, the 48-year-old executive is a step away from joining the company's senior management ranks. Life changed for him in 1985, when senior executives began feeling heavy pressure from above to make "workplace diversity" a reality rather than a topic of conversation. The chief of Levi's then-ailing European division tapped Kirtman to help rescue the unit. The young executive made the most of his opportunity and landed on the fast track. "We started to improve at Levi's," he says, "when we stopped talking about values like diversity and started behaving that way."

Levi Strauss is embarked on a grand social experiment. It is struggling mightily, though not always successfully, to live up to a singular, lofty vision of how to run a modern corporation—a vision set forth by none other than Chairman and Chief Executive Robert D. Haas, the great-great-grandnephew of founder Levi Strauss (page 51). The vision combines traditional liberal idealism with a set of management precepts straight out of the '90s zeitgeist of inclusion and "empowerment." Haas calls it "responsible commercial success." More con-

servative executives might call it flaky.

Haas believes the corporation should be an ethical creature—an organism capable of both reaping profits and making the world a better place to live. Creating tangible opportunities for minority employees such as Kirtman is only one part of the equation. Haas is out to make each of his workers, from the factory floor on up, feel as if they are an integral part of the making and selling of blue jeans. He wants to ensure that all views on all issues—no matter how controversial—are heard and respected. The chairman won't tolerate harassment of any kind. He won't do business with suppliers who violate Levi's strict standards regarding work environment and ethics. A set of corporate "aspirations," written by top management, is to guide all major decisions.

If many of these goals sound familiar, it's because countless other companies have tried to embrace them to one degree or another. Xerox, Johnson & Johnson, and MCI are all noted for their efforts to promote diversity of background and thought among their workers. Nike, Microsoft, and Federal Express are well known for pushing authority down through the ranks and allowing employees plenty of input when it comes to running the business.

Some companies approach diversity and empowerment as competitive tools. "We don't encourage homogeneity here," says Timothy F. Price, president of business markets at MCI Communications Corp. "The price you pay for conformity is lack of creativity." Others are learning to give ethnic minorities, homosexuals, and women protection and respect out of

**THE CEO AS GURU**  
**LEVI'S HAAS**  
**ESPOUSES**  
**"RESPONSIBLE COMMERCIAL SUCCESS"**

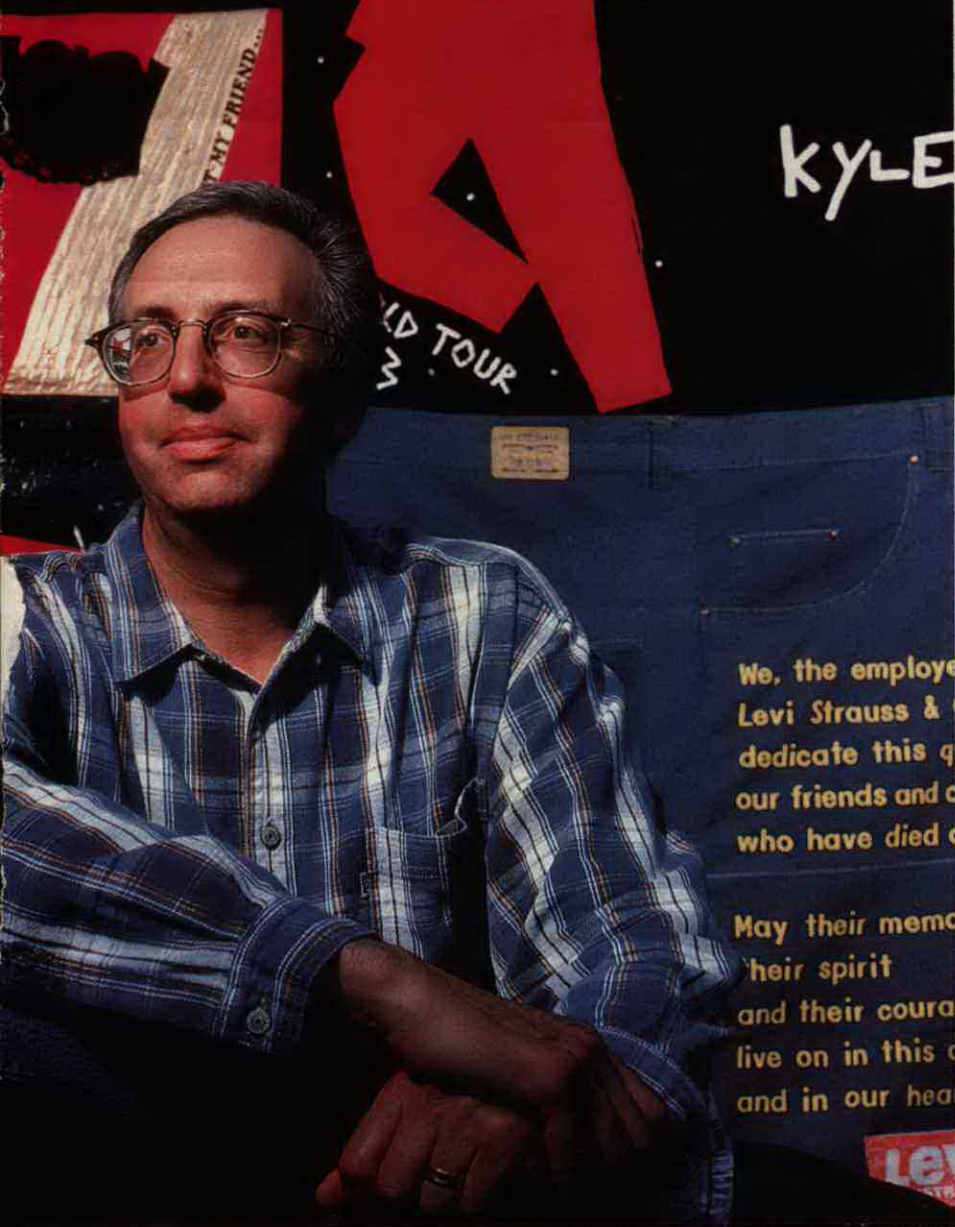


a late 20th century defensiveness: In an ever more litigious society, they fear being sued.

No company, however, has embraced a values-based strategy the way Levi's has. Sitting in his San Francisco office wearing a pair of pointy-toe boots, a plaid shirt, and stone-washed 501s, Haas explains why: "We are not doing this because it makes us feel good—although it does. We are not doing this because it is politically correct. We are doing this because we believe in the interconnec-



JACK  
SIGESMUND



We, the employees  
of Levi Strauss &  
Co. dedicate this space  
to our friends and family  
who have died...

May their memories  
live on in this space  
and in our hearts.

tion between liberating the talents of our people and business success."

Haas points to a study issued on May 30 by Gordon Group Inc. for the California Public Employees' Retirement System (CalPERS). Its conclusion: Companies that involve employees more often in decision-making boast stronger market valuations than those that don't. The report suggested that CalPERS might see stock gains by pressuring companies to improve workplace conditions. Says Richard H. Koppes, the pension

fund's general counsel: "This is one of the screens we'll use in looking for what companies we target."

Levi's, of course, won't be on Koppes' list. Ever since the \$1.6 billion leveraged buyout Haas led in 1985, the world's largest apparel maker has been a private company. CalPERS would probably like a piece, though. Record sales and earnings for five of the past six years culminated in a 36% rise in profits last year, to \$492 million on sales of \$5.9 billion. And Morgan Stanley & Co. esti-

mates that the stock—94% of which is in Haas family hands—has appreciated 1,300% since the LBO.

But this year, sales have slowed to a crawl, and operating profits will likely decline. A big problem is that Levi's is proving clay-footed when it comes to developing new products and getting goods into its retail outlets. Has the company's emphasis on "values" distracted it from the nuts and bolts of running its business? Haas says no, but plans to spend \$500 million starting this

## WHAT LEVI'S ASPIRES TO

### NEW BEHAVIORS

Management must exemplify "directness, openness to influence, commitment to the success of others, and willingness to acknowledge our own contributions to problems."

### DIVERSITY

Levi's "values a diverse workforce (age, sex, ethnic group, etc.) at all levels of the organization.... Differing points of view will be sought; diversity will be valued and honestly rewarded, not suppressed."

### RECOGNITION

Levi's will "provide greater recognition—both financial and psychic—for individuals and teams that contribute to our success...those who create and innovate and those who continually support day-to-day business requirements."

### ETHICAL MANAGEMENT PRACTICES

Management should epitomize "the stated standards of ethical behavior. We must provide clarity about our expectations and must enforce these standards throughout the corporation."

### COMMUNICATIONS

Management must be "clear about company, unit, and individual goals and performance. People must know what is expected of them and receive timely, honest feedback...."

### EMPOWERMENT

Management must "increase the authority and responsibility of those closest to our products and customers. By actively pushing the responsibility, trust, and recognition into the organization, we can harness and release the capabilities of all our people."

DATA: LEVI STRAUSS & CO.



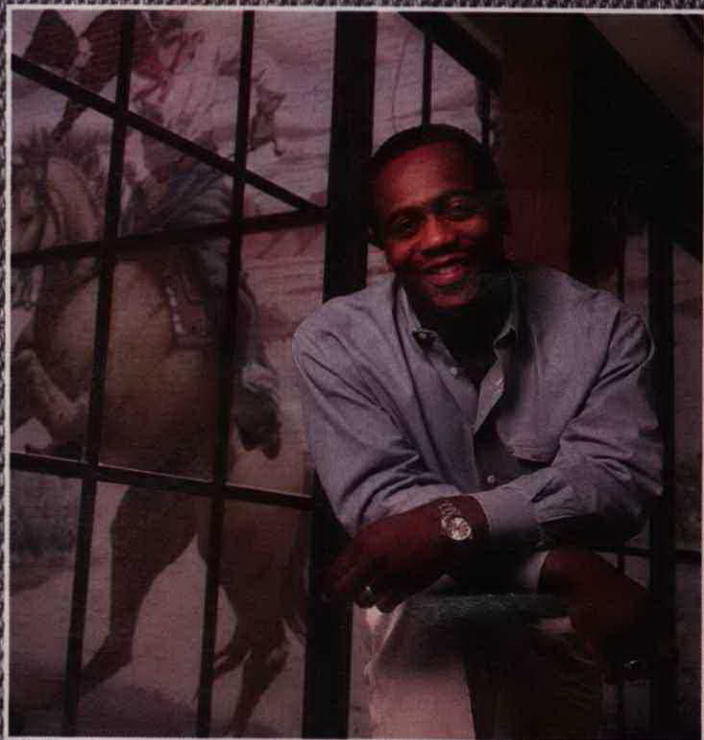
summer to restructure Levi's manufacturing, marketing, and distribution systems. He feels the company is in a temporary lull; in the long run, he insists, the cultivation of a culture devoted to such values as diversity and empowerment will make Levi's all the more responsive in the marketplace.

The jury is still out on that. BUSINESS WEEK had the opportunity to travel within the world of Levi's this spring and glimpse firsthand how Haas's experiment is proceeding. The following set of snapshots provides ample evidence that Haas is a long way from realizing his vision. "We are only a few steps along in our journey," he agrees. "We are far from perfect. We are far from where we want to be. But the goal is out there, and it's worth striving for."

## 'WHAT'S NEXT, CRYSTALS?'

Margaret P. Lourenco wasn't so sure about this values stuff when she first came to Levi's. A 32-year-old, can't-sit-still financial planner, she left J.P. Morgan & Co. in New York for San Francisco in 1990. She remembers well her reaction when she was first given the "Aspiration Statement," the corporate credo at the center of Haas's values-based strategy. "When I first read it," she recalls, "I said 'Phew, what are we going to have next, crystals?'"

A lot of people have that reaction. Printed on paper made from recycled blue denim, the Aspiration Statement hangs on office and factory walls throughout Levi's. To emphasize its gravity, Haas made sure it was crafted by top management, not the human resources department. At Levi's, one-third of an employee's evaluation is based on "aspirational" behavior: Ignore issues such as diversity and empowerment, and



you might not get your raise.

After the button-down atmosphere at Morgan, Lourenco was bemused by the "I'm O.K., you're O.K." nature of Levi's culture. But then she took a chance and politely criticized her boss for what she considered heavy-handed behavior. To her surprise, he agreed and changed his act. "I found that Aspirations isn't about

holder value."

"I haven't seen the word 'nice' anywhere in the Aspiration Statement," growls Robert D. Rockey Jr., president of Levi Strauss North America. Openness and respect don't equate with niceness, he says. "Honesty is the key." Levi's 360-degree review process, which requires that an employee be evaluated

New Age feel-good," she says. "It's about being open and direct. It's about getting rid of hidden agendas."

For his part, F. Warren Hellman worries that all this management-speak risks clogging up the works at Levi's. Doing the right thing is fine, he says, but "there's a danger that this will degrade into a touchy-feely, I-don't-want-to-offend-you, creativity-stifling style of management." Hellman is hardly a disinterested observer. A San Francisco investment banker, he's Bob Haas's distant cousin and a Levi's director.

Don't get the idea that Hellman is not foursquare behind the chairman. Even though he thought it was a terrible idea to leave such a potentially lucrative market, he joined the unanimous board vote to pull \$40 million of Levi's business out of China in protest of human-rights violations there. "Basically, we love Bob," Hellman says. "Bob has made a fortune for everyone, and you owe Bob one." Still, he says, "the challenge for Levi's is to be sure that decisions are not just 'nice' decisions, but decisions that are meant to enhance share-

## THE LEADERS

**ALTHOUGH LOUIS KIRTMAN (ABOVE) IS ON THE FAST TRACK TO THE TOP, LEVI'S UPPER RANKS REMAIN LARGELY MALE AND WHITE**



not just by his or her superior but also by subordinates and peers, isn't always pleasant. Rockey says his own evaluation "upset my self-image. I thought I was more visionary. I thought I was more caring. I was afraid to be personal." The reviews caused Rockey to loosen up somewhat, to command less, to listen more. But as his fellow workers can attest, the former Navy reserve captain still feels no need to be nice.

### 'WE'RE NOT A PERFECT COMPANY'

As far as some of the company's customers are concerned, Levi's has been a little too nice to its competition for the past few years. W. Barger Tygart, J. C. Penney Co.'s top merchandiser, finally has his wrinkle-free Dockers. But he had been clamoring for them for a year while Hagggar Apparel Co. and Farah Manufacturing Co. soaked up sales in the hottest segment of the men's pants business. "They don't have the flexibility" to move fast on fashion trends, Tygart gripes. Levi's admits that it already has lost at least \$200 million in sales by being slow into the wrinkle-free market. This year, the missed opportunity will contribute to Levi's first profit decline since 1988.

It has been a long time since retailers have been happy with Levi's customer support. Good thing the company offers high-quality clothes and a great brand name. "If you weren't Levi's," an executive at California's Mervyn's department stores once told the company, "you'd be gone." Tygart notes that Levi's might take 25 to 30 days just to replenish a standard lot of pants; Hagggar or Farah do it in 10. "That's 15 or 20 days when all we're selling is the competing product," Tygart says.

Such problems raise the question of whether Levi's emphasis on values is distracting. Haas insists that is not the case. Levi's, he argues, allowed its product development and customer service in the U.S. to slip because the company had been struggling to keep up with heady growth at home and explosive growth overseas. "We're not a perfect company," he says. "We could be doing a better job in customer service."

Haas believes the problems would be worse if it weren't for the company's free exchange of ideas. "If anything," he says, "I think our values help address the problems because we get more two-way communication." Levi's is counting on communication more than ever as it moves toward a solution: This summer it

is heading full bore into a \$500 million effort to remake its product-development and distribution systems. Warehouses will be relocated, computer systems will be overhauled, employees will be uprooted—and some of them may lose their jobs. Levi's executives acknowledge this will test the values strategy. "An environment of uncertainty produces a lot of fear," says one. "It's easy to regress to old behaviors in a situation like that."

Not surprisingly, Levi's whole approach to the reengineering is uniquely, well, aspirational. More than 6,000 of the company's 36,000 employees were asked to provide advice on what Levi's

tain climber's rope. "It allows individuals to take risks that they couldn't take if they weren't bound together by a common understanding," he says.

### 'I'M NOT A 35-YEAR-OLD WOMAN'

A diverse workforce, unafraid to volunteer idiosyncratic ideas and opinions, leads to better marketing decisions, insists Daniel M. Chew, Levi's director of corporate marketing. That doesn't mean market research and focus groups can be dispensed with. But an employee base that's more reflective of the customer base can make a company hipper and more responsive, Chew believes.

Long gone are the days when everyone wore the same kind of Levi's. Today, the company sells 200 styles of blue jeans alone. There is no way, Haas says, that top management can stay on top of fashion trends without help from deep within the organization. "I'm not a 35-year-old woman," says Haas. "I'm no hip-hopper. I'm not the target customer."

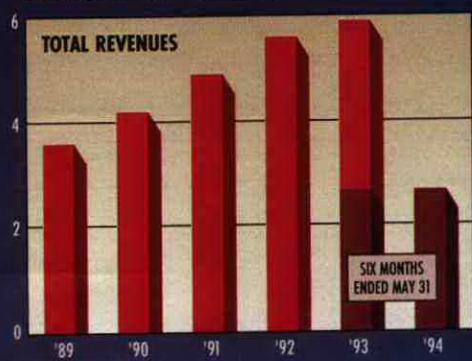
An example of diversity in action: While the gritty, independent hipsters in Levi's "501 Blues" TV ads have drawn young customers like a strong magnet, they didn't click for Levi's Hispanic employees and customers. "Why is that guy walking down the street alone?" they asked. "Doesn't he have any friends?" Scenes of friends and family would resonate better in their culture, they said, and given that Hispanics buy 50% more Levi's than the average customer, this was important information. So, Levi's launched a fresh series of 501 ads for the Hispanic market that downplayed individuality to emphasize camaraderie instead. Sales in the Hispanic community have been booming.

But even at Levi's, diversity at the top is a troublesome goal.

Haas's executive management committee is composed of seven middle-aged white men and one middle-aged white woman. While Haas openly recognizes the disparity between word and deed at the upper echelon, he explains that building talent takes a long time. Levi's has doubled the percentage of minority managers, to 36%, since Haas became CEO in 1984. Women have climbed from 32% of the management ranks to 54% in the same period. In both cases, Levi's vastly outperforms the average U.S. corporation, according to federal labor statistics.

Louis Kirtman, who is Levi's top black executive, says the company still has work to do, but he's happy with the fact Levi's has moved more than a dozen

## LEVI'S IS SLOWING DOWN



should be doing differently. With that input in hand, nearly 200 of the company's key managers took over an entire floor of cubicles at headquarters and spent more than a year planning at a cost of \$12 million. The company's Diversity Council, which is a direct link to senior management for groups representing blacks, Asians, Hispanics, gays, and women, also played a role in the decisions made.

The process took much longer and involved far more people than advisers at Andersen Consulting thought wise. But Haas says orienting the organization toward a common goal will prove more efficient in the long run. He sees the Aspiration Statement serving as a moun-



minorities and women into mezzanine-level management slots. A Hispanic man now runs Levi's South American sourcing operation. Women head up Levi's operations in Britain and Mexico. When some of the senior managers in their fifties move on, Kirtman says, "you'll see the real change occur."

Of course, all this talk about the importance of diversity is a thorn in the

who have spent their working lives taking orders.

Salas likes his job, but he's not so sure about the new team system Levi's is introducing in its 27 U.S. sewing plants. Instead of grouping workers by function—all the zipper-sewers in one area, all the belt-loop attachers in another—Levi's has created multitask teams of 20 or 30 workers each. They

teams have undergone one-day let's-get-along sessions with a private consultant. But even that hasn't done the trick. "We're trying to find a more effective way to do it," Alvarez says.

While most Levi's plants are nonunion, Levi's gets credit—even from the union leaders it does have—for running some of the safest most worker-friendly factories in an industry notorious for abuses. "Here, I can get up and go to the restroom or get a drink when I need to," says rivet setter Emerio Ponce, who has worked for another apparel maker in El Paso. "I wasn't used to that."

Still, critics charge that Levi's pays a lot more attention to workers and training at headquarters than in the factories. Milton Moskowitz, co-author of *The 100 Best Companies to Work For In America*, dropped Levi's from the list in the most recent edition, partly because of what he sees as a double standard. Although Haas has assured, for instance, that the partners of gay employees get health benefits—something that resonates loudest in San Francisco—he has shut down a pants factory in San Antonio in favor of moving the business to low-wage Costa Rica. The decision



side for some white males at Levi's. Several executives say, though not for attribution, that they've heard plenty of white males grumble about feeling "disempowered" as they try to advance within the corporation. Haas doesn't offer such employees much in the way of solace. For those white males "who focus on self-improvement and their contributions, the chances are good," Haas reflects. "We've eliminated the automatic promotions based on the old-boy network."

## IN BANGLADESH LEVI'S PAID TUITION FOR A CONTRACTOR'S UNDERAGE WORKERS

Salvador Salas is a long way from the old-boy network. Fingertips wrapped in green adhesive tape to prevent cuts and scratches, Salas sews blue-jean waistbands all day at the nonunion Kastrin Street factory in El Paso. If Haas's idealism is running into reality when it comes to white male egos in the executive suite, consider the factory floor. Empowerment and teamwork can be alien, uncomfortable concepts for those

are responsible for completing individual orders by assembling full pairs of pants, from waist to hem. After 18 months of teamwork in El Paso, turnaround time from order to shipment has

dropped from seven days to three. But the workers aren't all getting along.

Under the team system, a worker's incentive pay is tied to team performance. A poor performer or absent worker affects everybody's paycheck. When someone is perceived to be faking sick days or lollygagging on a sewing machine, tempers flare. Says Salas: "Somebody's fooling around, and somebody else calls attention to that, and the first guy will just flip him off." Supervisor Gracie Cortez says that "it gets tough out there." She finds herself intervening to prevent "big fights." Says plant manager Edward Alvarez: "Peer pressure can be vicious and brutal."

Kastrin Street plant workers got two weeks of training before the team system kicked in, part of it devoted to group dynamics. Alvarez allows it "wasn't enough." Since then, 4 of 39

idled 1,100 workers.

Levi's President Thomas W. Tusher says the company simply had no choice: The San Antonio plant made Dockers, which require twice the labor content of blue jeans. Levi's had to move to a low-wage country to compete on price in what has become a brutal market for casual all-cotton slacks. Other companies make similar decisions every day. But because of Levi's self-conscious reputation as an employer who cares, it opens itself up to plenty of criticism.

Haas's standard reply is that guaranteed employment is not a part of Levi's values system. Such a pledge would be "unwise and dishonest," he says. Still, as the restructuring program goes forward, more dislocations and layoffs are likely. When they come, Bob Haas will have a lot more explaining to do.

## 'WE DON'T SUPPORT CHILD LABOR'

The simple truth is, living up to a value system as comprehensive as Levi's is hard. It takes hours and hours of work. Today, near the Levi's contractor in Dhaka, Bangladesh, you can see young girls in pigtails, clutching textbooks to their



red-and-white school uniforms as they file into class. But not long ago, these same girls—11, 12, 13 years old—toiled full-time as seamstresses, earning \$384 a month sewing Dockers casual pants.

In 1992, to square its international sourcing practices with its own ethical code, Levi's began cracking down on child-labor violations by enforcing International Labor Organization standards that bar employment of children under the age of 14. Two Bangladeshi contrac-

tors admitted to Levi's that they hired children and agreed to fire them.

They also argued to Levi's officials, however, that the girls and boys provided their families' sole economic support—most of them were the oldest children in large, single-parent families. "We don't support child labor," says Robert H. Dunn, Levi's corporate-communications and community-affairs chief. "But our intention is not to have a devastating effect on families."

Levi's could have ignored its code or it could have canned the kids and forgotten about them. Instead, it worked out a compromise with the contractors: If they continued to pay wages and agreed to hire the children back when they turned 14, Levi's would send them to school and foot the bill for uniforms, books, and tuition.

The deal sounds expensive all the way around. But between the two, Levi's and its contractor have spent just a few

## A MILD-MANNERED MAVERICK PUTS HIS BRAND ON LEVI'S

**B**ob Haas is not what you would call a firebrand. The 52-year-old executive doesn't fill up the room with his charisma. His mild manner, his deferential bearing, even his tall, gangly frame make him eminently approachable. He hardly seems the type to instigate broad cultural change within a major American corporation.

Walter A. Haas Jr., in fact, figured his cerebral son would more likely become a college professor than join the family business. And oftentimes, the younger Haas's philosophical management approach does have the whiff of academe. A favorite tutorial is on egoless leadership: "The notion of the CEO as hero, as all-wise, as having all the answers" is sorely outmoded, Haas says. "I was raised on two principles: First, it's important to be modest and humble. Second, let actions speak for you, rather than tell people what they should do."

Even Haas admits his family ties lend special import to both his actions and his words. "I'm not so naive as to believe my word is valued equally with the word of any other person in this company," he says. But the Haas scion also brings to the CEO office a long, liberal tradition of inclusionary management and corporate responsibility. His grandfather, Walter Sr., who married into the Levi Strauss family, offered English and citizenship classes to factory workers in the 1920s. His father and his uncle Peter, who ran Levi's from the 1940s to the 1970s, were among the first to integrate factories in the South.

**BOUNTIFUL CROP.** Haas recalls frequent dinner table discussions during which his father would pointedly celebrate an immigrant janitor or a hardworking warehouseman. "He made clear they were little in stature but giant in their capabilities," Haas says. Bob began to test his own voice on matters of equality and empowerment at the University of California at Berkeley. As the

valedictorian of the class of 1964, Haas drew a front-page headline in the *San Francisco Examiner*: "A Student Scolds UC at Rites." He chided the institution for being "too impersonal" and his professors for being "remote and unapproachable."

Haas joined the Peace Corps after college but felt even that organization was sometimes too detached. In the Ivory Coast, Haas says, he watched foreign-aid workers from the U.S. and



Western Europe teach the native population everything from English to auto mechanics in air-conditioned classrooms. "It was never clear to me they made much of a difference," he says. A group of Taiwanese, however, said nothing to anyone while planting a couple acres with rice to produce a bountiful crop. The local people silently observed the Taiwanese technique and ended up adopting it. "That's the approach we're taking," Haas says. "We're letting people figure out for

themselves what it is they want. If it's important to them, they'll plant rice on their own."

From Africa, Haas went to Harvard University to earn an MBA and then served as a White House Fellow in the Johnson Administration. In 1969, he moved back to San Francisco as a McKinsey & Co. consultant, where he set himself apart for being outspoken with clients on such topics as the environment. In 1973, at the age of 31, he decided to join the family business. A year later, he married Colleen Gershon, who was an attorney for the Black Panther Party when they met.

By the time Haas became Levi's CEO in 1984, the company had become bloated and bureaucratic. Its rich cash flow made it prime takeover bait. Instead of becoming a target, Haas decided to saddle the company with \$1.6 billion in debt and take it private in a 1985 leveraged buyout. The high-risk move required him to ax 6,000 jobs while closing 26 plants. But it also allowed him to

### HEAD OF THE CLASS

THE 1964

VALEDICTORIAN

CALLED

BERKELEY "TOO

IMPERSONAL"

put in place his idealistic management architecture. Since then, Levi's profits have shaved the debt.

Haas, who lives near San Francisco with Colleen and their 15-year-old daughter, Elise, doesn't seem bothered by the paradox he embodies: His democratic approach might be possible only because its prime proponent is a dynastic prince whose family controls 94% of the company. "It's difficult to bring these ideas into any company," notes Levi's President Thomas W. Tusher. "I don't know that another company would have given him the opportunity." To Bob Haas, what matters is that he make the most of the opportunity he has been given.

By Russell Mitchell in San Francisco



thousand dollars. Besides, says Haas, such actions pay dividends in terms of brand image and corporate reputation. Just ask such companies as Wal-Mart Stores and Nike, which have come under fire for their Third World subcontracting practices. "In today's world, a TV exposé on working conditions can undo years of effort to build brand loyalty," says Haas. "Why squander your investment when, with commitment, reputational problems can be prevented?"

### 'IT'S A MATTER OF LEADERSHIP'

Bob Haas doesn't have to meet with stock analysts. He feels no pressure from Wall Street for neat, predictable quarterly results. Even the banks that funded his leveraged buyout are off his back: The company's mammoth cash flow has shaved debt to 4.6% of total capital. Would the company behave any differently if it were publicly traded? "It would take a lot more fortitude on the part of Levi's executives," Haas says. But he insists that "this is not a matter of structure, it's a matter of leadership."

Public company or not, Levi's experiment in corporate culture will attract attention and invite criticism. Noted apparel consultant Alan G. Millstein speaks for the many cynics when he says: "The company has the P.C. mindset. The Haases think they talk to God."

Now that enough operational problems have cropped up to slow financial results, Haas has given his critics some ammunition they didn't have before. But he goes out of his way to say that you can't abandon management-science efforts simply because things get tough. Too many managers, he feels, use that as an excuse to hide their "resistance to the idea that the soft sides and hard sides of management can be combined."

It's not so much that they can't be combined but that they may have unintended consequences when they are. Dealing with the surprising, often contradictory results of managing by values may be a manager's toughest task. Many managers are likely to ask themselves: Is it worth the trouble? Many, perhaps, would say "no."

"People are comfortable with the traditional ways of doing business," Haas says. "They might say, 'We aspire to do the things you've done, but we don't have time for it, the stock market wouldn't value it, or we're not as prosperous as Levi Strauss is.'" When it comes to managing by values, Haas has a way to go to meet his own exacting standard. But he can't be faulted for bowing to what's comfortable.

By Russell Mitchell in San Francisco, with Michael Oneal in New York and bureau reports

## WHO WILL STOP THE MUTANT MICROBES?

Drugmakers are scrambling for new weapons to kill "superbugs"

To scientists and doctors who thought they had annihilated such bacterial killers as tuberculosis and staph infections a decade ago with antibiotics, what's happening in hospitals today is more frightening than a late-night horror flick: The bugs are back. After 40 years of aggressively pushing antibiotics, doctors are now confronting bacteria that have mutated defenses against drugs. Of the 2 million patients who get infections in hospitals each year, up to 60% are struck by microbes that have become resistant to drugs.

The specter of patients dying from once treatable infections, plus a promise from the Food & Drug Administration to fast-track new antibiotics through the regulatory morass, has created a golden opportunity in the \$20 billion worldwide antibiotics business. Such giants as Glaxo, Merck, Schering-Plough, and SmithKline Beecham are scrambling to bolster their antibiotics research and development, and they're searching the labs of small companies for prospects. In fact, large drugmakers are likely to come up with the first new drugs aimed at these "superbugs," created by adapting chemicals in their existing libraries to work against the resistant bugs—if only temporarily.

Yet in the long run, scientists are convinced that the best way to foil drug-resistant bugs is with medicines

"that work through new mechanisms of action," says Keith A. Bostian, a former Merck & Co. R&D manager who is now chief operating officer of two-year-old drugmaker Microcide Pharmaceuticals Inc. The Mountain View (Calif.) company is one of a few working on gene-based schemes to outwit microbes. "Chemists have gone as far as they could incrementally refining these agents" and instead must mine biotechnology and genetics for new strategies, he says. Indeed, the future for antibiotics is "coming more and more from biology," says Steve M. Elliston, president of Micrologix Biotech Inc.

**NEW ATTACKS.** Some of the most intriguing of these approaches are coming from Micrologix, Agennix, Magainin, Xoma, and a handful of other small companies. They are combining high-tech medicine and a witches' brew of proteins from bees, sharks, cows, and even humans to create new weapons. These agents combat bacteria very differently from existing drugs—and that's what gives them so much promise.

Of the 30 new antibiotics the established drug industry claims it has on the runway today, most are variations on existing drugs, which work through several narrow mechanisms. But bacteria replicate at blinding speed—sometimes doubling in a few minutes. The process can produce genetic mutations

## FIGHTING RESISTANT BUGS

### THE PROBLEM

Widespread and inappropriate use of antibiotics has helped disease-causing bacteria develop resistance. Once bacteria become resistant, they transfer that ability to other strains. Since most current antibiotics come from molds and bugs in the soil, they work in similar ways. To overcome resistance, doctors need new drugs that outfox bugs differently.

### THREE POTENTIAL SOLUTIONS

**1 NATURAL PROTEINS** Humans, cows, frogs, sharks, and even insects, all carry antimicrobial proteins in their bodies. Scientists are trying to gene-splice promising candidates to use as antibiotics.

#### COMPANIES:

Magainin,  
Xoma,  
Micrologix,  
Agennix

