

INSIDE INTEL

Andy Grove and the
Rise of the World's Most
Powerful Chip Company

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A DUTTON BOOK

in rare cases, can cause sophisticated mathematical calculations to go wrong. Intel says it found the problem earlier this summer and removed it, starting about two months ago. That means the bug is in at least two million chips. But Intel says the typical user will run into the problem once in 27,000 years, barely a speck in the solar system.

STEPHEN SMITH, PENTIUM ENGINEERING MANAGER, INTEL: If you measure the distance from the earth to the sun, the one part is on the order of feet, a few feet of difference relative to the measured distance between the earth and the sun.

YOUNG: Intel says it's had just a single complaint, but CNN Business News has spoken with a dozen Pentium customers, from scientists to government, who say they've lost confidence, and there are hundreds of worried messages on the Internet—one posted by a software company, Mathworks in Natick, Massachusetts, which sells math-intensive software used to design cars, aircraft, even parts for PCs themselves.

CLEVE MOLAR, CHAIRMAN AND CHIEF SCIENTIST, MATHWORKS: The concern I have is just the reliability of the results. I'd like to compare it with a dead battery in a smoke detector at home. Chances are your smoke detector is never going to go off, but you sure want to know that it's working.

YOUNG: Intel is issuing no Pentium recall. It says if a worried customer wants a replacement chip, Intel will decide if the customer really needs one. The Jet Propulsion Laboratory in Pasadena, California, which runs unmanned spacecraft missions, is discussing whether to continue relying on Pentium PCs after complaints from staff scientists. Intel has spent tens of millions of dollars on its brand loyalty campaign. It faces PR problems now on the Internet and in trade magazines, which could spill into the mainstream. The episode may undermine Intel's ability to position Pentium as its first chip suitable for scientific workstations, but it's being widely adopted in the much bigger consumer market for multimedia machines—and there, the bug is a non-issue. Jan?

The story was correct in every detail except one: In claiming that Intel had acknowledged “for the first time” that it had known about the bug since the summer, CNN was trying to make its story seem a bit more up-to-the-minute. In fact Intel had given that information to the trade press several weeks earlier. But this was a forgivable

journalistic foible. Otherwise, the channel conveyed all the key points of the issue fairly. It pointed out the rarity of the bug, and the fact that it wouldn't affect most users—and it had focused, correctly, on the greater importance in the market of perception than reality and on the loss of confidence that discovery of the bug had provoked among the specialist scientists who were a tiny minority of users. And the story's key prediction—that Intel's PR problems “may spill into the mainstream”—proved self-fulfilling. Within two days, the *New York Times*, *Wall Street Journal*, and *Boston Globe* had all run long stories that treated the issue responsibly and put it into context. Within another week, David Letterman had included a Pentium joke in his monolog.

At the technical support center in Folsom, the lights on the phones began blinking minutes after the CNN broadcast. A day later, the center was working to capacity. Its daily volume had shot up from 1,500 incoming calls to nearly 7,000—and the result of the flood of angry customers was to block incoming and outgoing calls from the entire Folsom facility.

Now, surely, the time had come for Andy Grove to change his mind. If only Intel would give up the “qualification process” and state that anyone who wanted a replacement Pentium would get one, then most of the anger on comp.sys.intel would subside and the media would lose interest in the story. But Grove and his colleagues, now meeting daily in conference room 528, twenty feet from the CEO's cubicle, could not bring themselves to take a step which they knew made no sense at all in engineering terms: to replace, free of charge, tens of thousands of chips for customers whose work would hardly be affected. The policy became to brazen it out: to keep repeating, as often as possible and with support from as many PC companies and other chipmakers as possible, that every processor had a few tiny flaws, and that this one didn't matter.

Although Intel's stock dipped 2 percent the day after the *Wall Street Journal* story hit the streets, and other newspapers across the world followed suit in reporting the flaw, the policy looked for a while as though it might work.

“Users started to call us asking for replacement chips,” recalled Grove in *Only the Paranoid Survive*. “People whose use pattern suggested that they might do a lot of divisions got their chips replaced. Other users we tried to reassure by walking them through our studies and our analyses, offering to send them a white paper that we wrote